

PART B  
SOLAR - GEOPHYSICAL DATA

ISSUED  
APRIL 1959

U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO



## SOLAR - GEOPHYSICAL DATA

### CONTENTS

#### INTRODUCTION

Description of Tables and Graphs

#### I DAILY SOLAR INDICES

- (a) Relative Sunspot Numbers and 2800 Mc Solar Flux
- (b) Graph of Sunspot Cycle

#### II SOLAR CENTERS OF ACTIVITY

- (a) Calcium Plage and Sunspot Regions
- (b) Coronal Line Emission Indices - March 1959

#### III SOLAR FLARES

- (a-j) Optical Observations - March 1959
- (k) Flare Patrol Observations - March 1959
- (l) Subflares - February 1959
- (m-q) Optical Observations - January 1959
- (r) Flare Patrol Observations - January 1959
- (s) Optical Observations - Addenda and Corrections
- (t) Flare Patrol Observations - Mt. Wilson Corrections
- (u) Ionospheric Effects (SWF) - February 1959
- (v,w) Ionospheric Effects (SEA-SCNA-Bursts) - August 1958

#### IV SOLAR RADIO WAVES

- (a) 9530 Mc -- Daily Data and Outstanding Occurrences (USNRL) March 1959
- (b) 9530 Mc -- Daily Data and Outstanding Occurrences (USNRL) February 1958
- (c) 3200 Mc -- Daily Data and Outstanding Occurrences (USNRL) March 1959
- (d) 3200 Mc -- Daily Data and Outstanding Occurrences (USNRL) February 1958
- (e) 2800 Mc -- Outstanding Occurrences (Ottawa) March 1959
- (f) 169 Mc -- Interferometric Observations (Nançay) March 1959
- (g) 167 Mc -- Daily Data (Boulder) December 1958
- (h) 167 Mc -- Outstanding Occurrences (Boulder) December 1958
- (i) 167 Mc -- Outstanding Occurrences (Boulder) January 1959

#### V GEOMAGNETIC ACTIVITY INDICES

- (a) C, Kp, Ap, and Selected Quiet and Disturbed Days
- (b) Charts of Kp by Solar Rotations

#### VI RADIO PROPAGATION QUALITY INDICES

##### North Atlantic:

- (a) CRPL Quality Figures and Forecasts
- (b) Graphs Comparing Forecast and Observed Quality
- (c,d) Graphs of Useful Frequency Ranges

##### North Pacific:

- (e) CRPL Quality Figures and Forecasts
- (f) Graphs Comparing Forecast and Observed Quality

#### VII ALERT PERIODS AND SPECIAL WORLD INTERVALS

- (a) IGC 1959 Alerts and SWI

## INTRODUCTION

170 Mc Observations

Data on solar radio emission at the nominal frequency of 170 Mc recorded at the Gunbarrel Hill (Boulder) station of the National Bureau of Standards (C.G. Little) are presented. The half width of the antenna lobe is appreciably greater than the solar disk. Polarization is not determined, but the dipole is oriented E-W. All times are in Universal Time (UT or GCT). Observations are interrupted during the period from 26 to 29 minutes after each hour for calibrations.

Beginning January 1, 1959 the method of reducing the records has been changed. The 3-hourly and daily flux density and variability are no longer determined. The outstanding occurrences are reported. However, instead of giving the intensity to the nearest unit of  $10^{-22}$  watts meter<sup>-2</sup>(c/s)<sup>-1</sup>, a scale of 1 to 3 is now used where for the estimate of smoothed maximum flux:

- 1 signifies  $<100 \times 10^{-22}$  wm<sup>-2</sup>(c/s)<sup>-1</sup>
- 2 signifies  $>100 <1000 \times 10^{-22}$  wm<sup>-2</sup>(c/s)<sup>-1</sup>
- 3 signifies  $>1000 \times 10^{-22}$  wm<sup>-2</sup>(c/s)<sup>-1</sup>.

Starting and maximum times are read to the nearest 1/10 minute if they are very definite and otherwise to the nearest minute. If the duration is less than five minutes, it is given to the nearest 1/10 minute; otherwise to the nearest minute. The following qualifying symbols are used:

- E = Event in progress before observations began.
- D = Event continues after observations cease.
- I = Event apparently continued during an interruption of the observations. The period of the interruption may be given in the remarks.
- S = Measurement may be influenced by interference or atmospherics.

The types of the outstanding occurrences follow the classification described by Dodson, Hedeman and Owren (Ap J. 118, 169, 1953), in which the types are identified by numbers which describe the character of the trace, but not the magnitude of the event, as follows:

0 - Rise in base level -- A temporary increase in the continuum with duration of the order of tens of minutes to an hour.

1 - Series of bursts -- Bursts or groups of bursts, occurring intermittently over an interval of time of the order of minutes or hours. Such series of bursts are assigned as distinctive events only when they occur on a smooth record or show as a distinct change in the activity.

2 - Groups of bursts -- A cluster of bursts occurring in an interval of time of the order of minutes.

3 - Minor burst -- A burst of moderate or small amplitude, and duration of the order of one or two minutes.

4 - Minor burst and second part -- A double rise in flux in which the early rise is a minor burst.

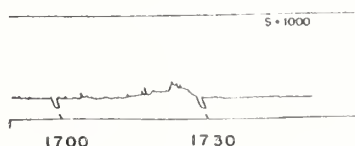
6 - Noise storm -- A temporary increase in radiation characterized by numerous closely spaced bursts, by an increase in the continuum, or by both. Duration is of the order of hours or days.

7 - Noise storm begins -- The onset of a noise storm occurs at some time during the observing period.

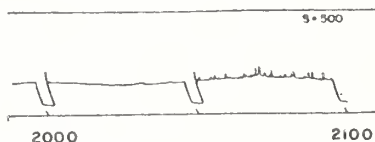
8 - Major burst -- An outburst, or other burst of large amplitude and more than average duration. A major burst is usually complex, with a duration of the order of one to ten minutes.

9A, 9B, or 9 -- Major burst and second part or large event without distinct first and second parts -- If there is a double rise in flux, the first part, a major burst, is listed as 9A and the second part as 9B. The second part may consist of a rise in base level, a group or series of bursts, a noise storm. A major increase in flux with duration greater than ten minutes but without distinct first and second parts, is listed simply as 9.

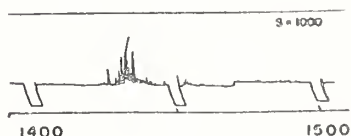
0-RISE IN BASE LEVEL



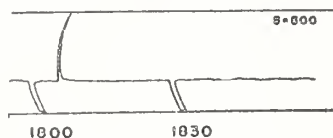
1-SERIES



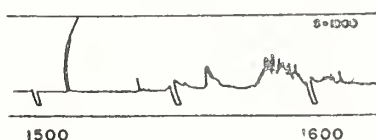
2 - GROUP



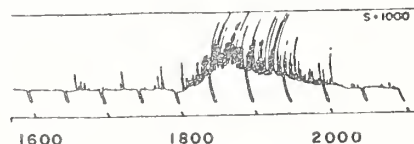
3 - MINOR



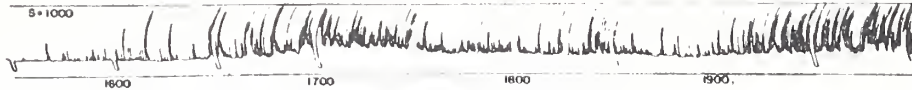
4 - MINOR+



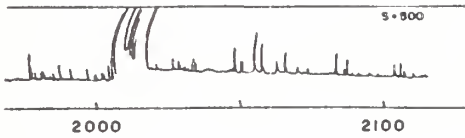
7-ONSET OF NOISE STORM



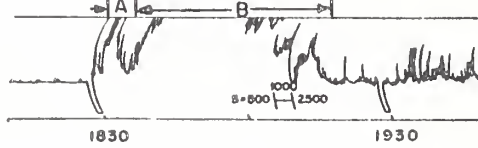
## 6-NOISE STORM IN PROGRESS



## 8-MAJOR



## 9-MAJOR +



Note: In the present table, the type classifications 0 and 1 are not used; they have been included above only for information.

- - - - -

The descriptive text is published quarterly or whenever context of the report is changed. The last issue in which the text appeared was CRPL-F174 Part B issued February 1959.

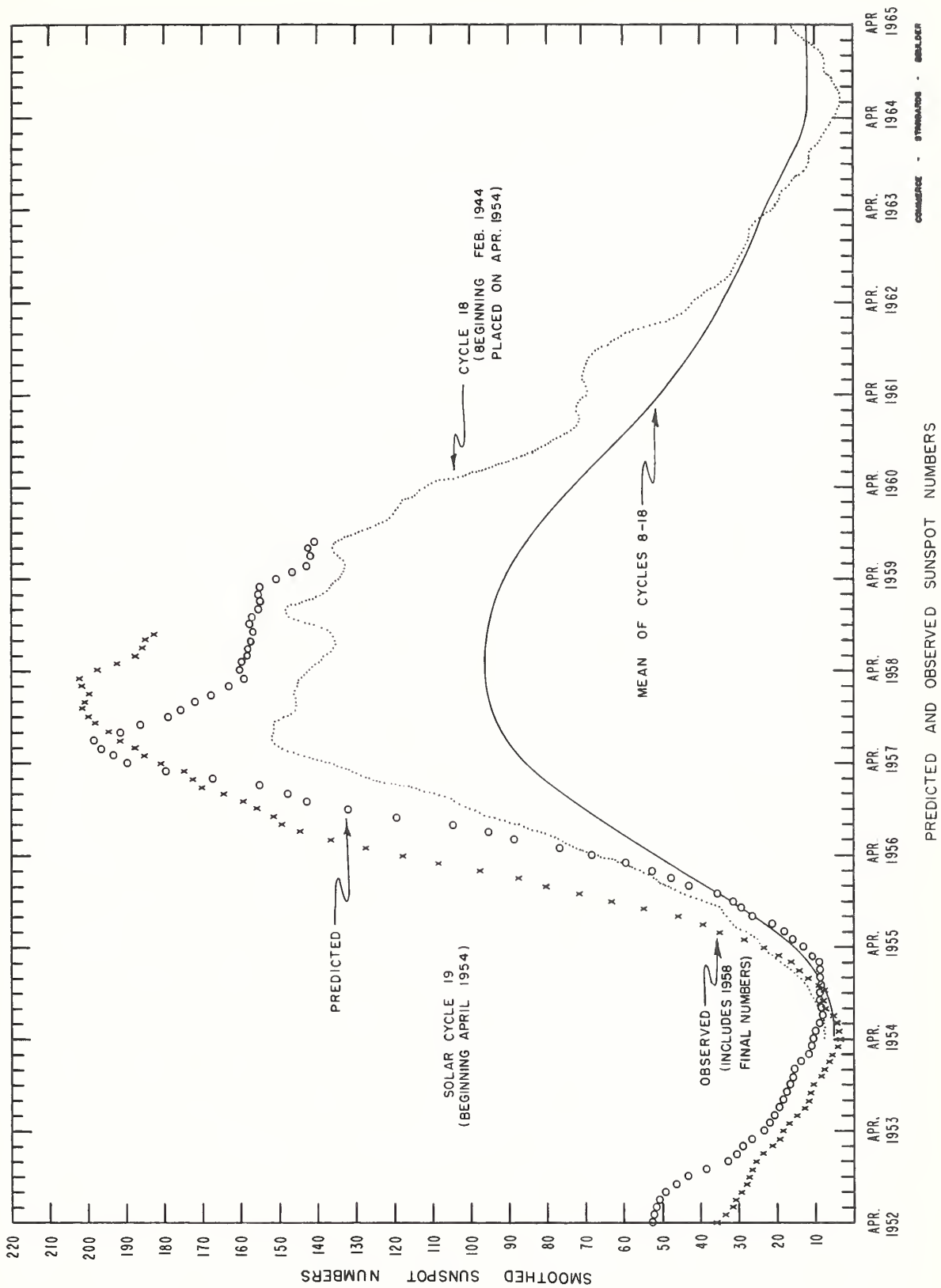


# DAILY SOLAR INDICES

Feb. 1959	American Relative Sunspot Numbers $R_A$
1	107
2	118
3	133
4	155
5	109
6	103
7	63
8	66
9	83
10	96
11	114
12	78
13	102
14	77
15	120
16	104
17	169
18	115
19	112
20	111
21	135
22	142
23	172
24	151
25	142
26	172
27	152
28	129
Mean:	118.9

Mar. 1959	Zürich Provisional Relative Sunspot Numbers $R_Z$	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	158	187
2	144	181
3	137	181
4	145	178
5	133	179
6	138	190
7	139	188
8	140	191
9	149	198
10	151	204
11	135	201
12	126	194
13	159	207
14	173	215
15	216	235
16	225	246
17	228	259
18	230	274
19	242	281
20	236	285
21	215	287
22	200	262
23	194	258
24	178	247
25	199	248
26	195	247
27	178	246
28	171	248
29	217	245
30	227	258
31	244	254
Mean:	181.4	228.2





## CALCIUM PLAGE AND SUNSPOT REGIONS

MARCH 1959

CMP Mar. 1959	Lat	McMath Plage Number	Return of Region	Calcium Plage Data				Sunspot Data			
				CMP Values Area Int.		History, Age		CMP Values Area Count		History	
0.16	S06	5031	4991	2000	3	$\ell \setminus d$	6	60	4	$\ell \setminus d$	
02.6	S02	5040	New	300	2	$b \wedge d$	1	20	1	$b \wedge d$	
03.2	N17	5032	4993	3000	2	$\ell - \ell$	3				
04.4	S03	5034	New	1200	2.5	$\ell \setminus d$	1	20	1	$\ell \setminus d$	
05.3	S17	5036	New	1500	2.5	$\ell - \ell$	1	270	7	$b \nearrow \ell$	
05.4	N18	5035	4997	5200	3	$\ell - \ell$	4	130	2	$\ell / \ell$	
06.8	N13	5037	4997	1400	2	$\ell - \ell$	4				
07.0	N08	5041	New	800	2	$\ell / \ell$	1				
07.7	S11	5039	New	1800	3.5	$\ell / \ell$	1	820	5	$\ell - \ell$	
09.0	N16	5051	New	(1500)	(2.5)	$b \nearrow \ell$	1	120	2	$b \wedge d$	
11.0	N25	5043	5003	4000	3	$\ell / \ell$	4	100	2	$\ell \setminus d$	
11.4	S18	5042	New	1300	2	$\ell \setminus d$	1				
11.8	N08	5045	New	2500	3	$\ell \setminus d$	1	120	1	$\ell \setminus d$	
12.4	S15	5044	5019	1300	2	$\ell \setminus d$	2	120	4	$\ell \setminus d$	
13.6	N18	5046	New*	2200	2	$\ell - \ell$	1	220	2	$\ell - \ell$	
15.0	N10	5048	5009	2800	2.5	$\ell - \ell$	5	290	1	$\ell - \ell$	
15.2	S14	5047	New	(500)	(3)	$\ell - \ell$	1				
15.2	N23	5057	New	800	2	$b / \ell$	1				
15.9	S08	5049	New	700	2	$\ell \setminus \ell$	1	190	1	$\ell \setminus \ell$	
16.5	N34	5050	5012	1000	2	$\ell \setminus d$	2				
17.6	S15	5053	5014	1000	2.5	$\ell - \ell$	7	60	2	$\ell - \ell$	
18.0	N09	5052	**	8000	3	$\ell - \ell$	3	1770	14	$\ell - \ell$	
18.6	N28	5054	***	8500	3	$\ell - \ell$	1	2470	10	$\ell - \ell$	
18.7	S12	5055	5017	700	2	$\ell \setminus d$	3	70	1	$b \wedge d$	
19.0	S23	5064	New	(500)	(2)	$b \nearrow \ell$	1				
21.1	N17	5058	5018	9000	3	$\ell \setminus \ell$	4	1610	10	$\ell \wedge \ell$	
22.3	N29	5059	5018	1200	2.5	$\ell - \ell$	4				
24.6	N15	5060	****	4500	2.5	$\ell - \ell$	2	750	8	$\ell \setminus d$	
26.3	N22	5061	5026	3000	3	$\ell - \ell$	4	1210	6	$\ell - \ell$	
26.6	S33	5065	5027	600	3	$\ell - \ell$	2	110	5	$\ell - \ell$	
27.7	S08	5063	New	2500	3	$\ell - \ell$	1	610	19	$\ell \wedge \ell$	
28.2	N18	5070	New	800	2.5	$b / \ell$	1	(270)	(21)	$b / \ell$	
29.2	S03	5077	New	(400)	(2)	$b \nearrow \ell$	1	(80)	(2)	$b \nearrow \ell$	
29.3	N07	5066	New	1000	3.5	$\ell - \ell$	1	500	6	$\ell - \ell$	
30.2	S03	5067	5040	1200	3	$\ell - \ell$	2				
30.3	N11	5069	5032	1200	3	$b \wedge d$	4				
30.5	S13	5078	New	200	2	$b \nearrow \ell$	1				
31.0	N23	5068	5032	5000	3	$\ell - \ell$	4	2480	5	$\ell - \ell$	
31.3	N03	5079	5034	300	2	$b \nearrow \ell$	2				
31.5	S04	5074	5034	200	3	$b \nearrow \ell$	2				

COMMERCE - STANDARDS - BOULDER

\* In position of old 5008.

\*\* 5013 and 5016.

\*\*\* Mostly new in position of old 5015.

\*\*\*\* 5023 and 5025.

# CORONAL LINE EMISSION INDICES

MARCH 1959

CMP March 1959	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>
1	x	x	x	x	x	x	x	x	93	125	22	48	97	136	23	30
2	x	x	x	x	x	x	x	x	101	148	14	36	131	211	28	42
3	158	186	24	54	109	175	30	78	x	x	x	x	x	x	x	x
4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5	x	x	x	x	x	x	x	x	141	260	44a	107a	226	310	77a	136a
6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	129	184	56	72	42	72	29	84	x	x	x	x	x	x	x	x
8	105	128	31	48	49	56	14	21	x	x	x	x	x	x	x	x
9	134	188	52	90	47	52	20	27	x	x	x	x	x	x	x	x
10	140	160	58	138	63	112	32	72	x	x	17a	30a	139	160	36a	56a
11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	76	102	38	63	64	96	21	63	95	140	x	x	122	140	x	x
14	x*	x	x	x	98	147	47	84	106	138	x	x	121	131	x	x
15	94	111	31	45	x	x	x	x	x	x	x	x	x	x	x	x
16	148	209	30	48	149	172	27	54	x	x	x	x	x	x	x	x
17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
18	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
19	184	209	69a	104a	107	129	20a	36a	x	x	x	x	x	x	x	x
20	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
22	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
24	137	179	43	56	41	48	15	21	x	x	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	149	197	x	x	93	122	x	x	x	154	x	x	x	239	x	x
28	164	200	x	x	107	152	x	x	50	87	x	x	174	196	x	x
29	x	x	x	x	x	x	x	x	104	166	15	24	140	223	26	31
30	x	x	x	x	x	x	x	x	120a	181a	x	x	161	307a	x	x
31	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

a - index computed from low weight data

x - no observations.

\* - yellow line observed.

COMMERCE - STANDARDS - BOULDER

# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX. PHASE	APPROX.					McMATH PLAGE REGION	TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH H <sub>g</sub>	MAX. INT. %
					LAT.	MER. DIST.										
{ CAPRI-S WENDEL WENDEL ZURICH CAPRI-G CAPRI-G CAPRI-G SAC PEAK SAC PEAK HAWAII	MAR 1959	01 0752	0804 D		N14	E50	5035	12 D	1	1	0759	1.50	2.50			
	01 0752	0825 D		N15	E50	5035		33 D	16				5.00			
	01 0835	0841		N24	W33	5026		6					3.00			
	01 1015	E		N21	W35	5026		10 D	1	3	1015		1.00			
	01 1258	E		N20	W38	5026		27 D	1	3	1300		4.00			
	01 1612	E		N24	W38	5026		10 D	1	3	1615		4.00			
	01 1812		1821	N32	E90	5051		33	2	2		5.30				18
	01 2257	D	2302	N13	E40	5035		10	1	2		2.50				20
	01 2300	E	2300	N17	E38	5035		18 D	16	2	2300	3.70	5.20			
	02 0730	E	0830 D		N22	W50	5026		60 D	16				5.00		
{ CAPRI-G WENDEL WENDEL LOCARNO CAPRI-S LOCARNO CAPRI-S WENDEL WENDEL WENDEL LOCARNO	02 0735	E	0752 D		N21	W50	5026	17 D	2	1	0737		7.00			
	02 0741	E	0759 D		N26	W43	5026	18 D	2				3.00			
	02 0745	E	0840		N20	W50	5026	55 D	2		0745		2.00			
	02 0753	E	0852 D		N19	W44	5026	59 D	1	2		2.50	5.00			
	02 0745	E	0815		S06	W04	5031	30 D	1	2	0757					
	02 0801	E	0822 D		S07	W11	5031	21 D	1	2	0745					
	02 0758	E	0834		N05	W04	5040	36 D	1		0807	4.00				
	02 0841	E	0900 D		N17	W75	5023	19 D	1				3.00			
	02 0930	E	0936 D		N23	W46	5026	6 D	1				3.00			
	02 1010	E	1030		N21	E90	5043	20 D	16	2	1010	3.00	4.20			
{ CAPRI-S WENDEL WENDEL CAPRI-G WENDEL WENDEL WENDEL WENDEL CAPRI-G CAPRI-G CAPRI-G	02 1030	E	1046 D		S20	E38	5036	16 D	1	2	1041					
	02 1034	E	1046 D		N18	E35	5035	12 D	1				4.00			
	02 1102	E	1100 D		N23	W47	5026	8 D	1	1	1112		3.00			
	02 1110	E	1138		S12	E68	5039	28 D	1				3.00			
	02 1254	E	1305		N26	W49	5026	11	1				3.00			
	02 1421	E	1447 D		S10	E66	5039	26	1	3	1447	2.20	5.10			
	02 1545	E	1604 D		N26	W50	5026	19 D	1	2	1547		3.00			
	02 1555	E	1604 D		S18	E35	5036	9 D	1	2	1556		2.00			
	02 1637	E	1732	1652	S19	E34	5036	55	1	2		3.50				20
	02 1641	E	1727		S19	E33	5036	46 D	1	1	1654		2.15			Slow S-SWF
{ MCWATH MCWATH CLIMAX HAWAII	02 1851	D	1902 D		N22	W55	5026	11 D	1	1	1900		2.30			
	02 2317		2329		N26	W56	5026	12	1		2319	2.10				S-SWF
	02 2318		2334	2320	N23	W58	5026	16	1	3	2320	3.30	7.60			
	03 0800	E	0928		S12	E56	5039	88 D	16				5.00			
	03 0832	E	0853 D		S10	E56	5039	21	1	3	0851	2.00	3.50			
	03 0921	E			S10	E56	5039		1	1						
	03 0902		0926	0906	N26	W57	5026	24	1				3.00			S-SWF
	03 1012	E	1204 D		S10	E56	5039	112 D	16				6.00			
	03 1035		1115 D		N12	E20	5035	40 D	16				5.00			
	03 1147		1152		S19	E12	5036	15	1	1	1148	4.00				
{ CAPRI-S CAPRI-G CAPRI-G CAPRI-G CAPRI-G CAPRI-G CAPRI-S CAPRI-S CAPRI-S CAPRI-S	03 1306	E	1313 D		S10	E53	5039	7 D	1	1	1309		3.40			
	03 1432	E	1442 D		S16	E19	5036	10 D	1	2	1434	2.00	3.00			
	03 1455	E	1540 D		N20	W70	5026	45 D	1	1	1455		2.00			
	03 1545	E	1552 D		S11	E51	5039	7 D	16	1	1550		5.00			
	03 1545	E	1553 D		S10	E52	5039	8 D	1	2	1547	2.50	4.30			
	03 1545	E	1555	1547	S11	E50	5039	10	1	3		3.40				17
	04 0317		0330	0321	S13	E42	5039	13	1	2	0321	1.82	2.73	1.80		
	04 0345	E	0357		N22	W85	5026	12 D	2	2	0345	1.52	12.39	2.00		
	04 0715	E	0730 D		S09	E41	5039	15 D	1	2	0718	2.50	3.30			
	04 0948	E	1010 D		S18	E10	5036	22 D	1	2	0952	3.50	3.50			

# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	MED. DIST.				McMATH PLACE REGION	TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH Ha
{CAPRI-G CAPRI-G HAWAII	04	1004 E	1050 D	S16 E09		5036	46 D 16	2	1045		6.00			S-SWF
	04	1004 E	1050 D	S11 E40		5039	46 D 1	2	1005		2.00			
	04	2346	0006	S09 E34		5039	20 1	3	2350	2.10	2.50			
CAPRI-G	05	0945 E	0955 D	S17 W00		5036	10 D 1	3	0946		3.00			
	05	0950 E	0955 D	S10 E26		5039	5 D 1	3	0951		3.00			
	05	1215 E	1310 D	S10 E26		5039	55 D 1	3	1217		4.00			
CAPRI-G	05	1240 E	1257 D	N22 W90		5026	17 D 2	2						
	05	1345 E	1402 D	N22 W90		5026	17 D 2	2						
	05	1436	1438 D	S18 W15		5036	2 D 1	5	1438	4.00				
{SAC PEAK CAPRI-G	05	1525	1547	N23 W90		5026	22 1	2		2.10			35	
	05	1526 E	1557 D	N16 W90		5026	31 D 16	2						
CAPRI-S	06	0754 E	0808 D	N19 E57		5043	14 D 1	3	0756	2.50	5.00			
	06	1008 E	1012 D	N17 W90		5026	4 D 1	2						
	06	1148 E	1207 D	N09 E69		5045	19 D 1	2	1150		3.00			
{KANZELHOHE CAPRI-G	06	1225 E	1416 D	N11 W21		5035	111 D 2	1	1325	5.00	5.50			
	06	1245 E	1325 D	N15 W18		5035	13 D 2	1	1316		8.00			
	06	1312 E	1350	N13 W22		5035	10 D 2	5	1342	7.00				
{UCCLE UCCLE CAPRI-G	06	1340 E	1405 D	N14 W20		5035	5 D 1	1						
	06	1342 E		N15 W23		5035								
	06	1400 E		N17 W90		5026								
{SAC PEAK SAC PEAK SAC PEAK	07	1723 U	1750 U	N01 E90		5049	27 D 2	3		8.10			20	
	07	1733	1750	S01 E90		5049	17 16	3	1737	2.60			25	
	07	1733	1748 U	N13 E90		5048	15 16	3		2.10			17	
CAPRI-G	08	0921 E	0930 D	N22 W45		5035	9 D 1	3	0922		3.00			
	08	1045 E	1055 D	S17 W34		5036	10 D 1	2	1054		4.00			
	08	1050	1112	S18 W33		5036	22 16	3			2.00			
CAPRI-G	08	1106 E	1112 D	N14 W41		5035	6 D 1	3	1110		3.00			
	08	1151 E	1205 D	N22 E23		5043	14 D 1	3	1153	2.50	3.00			
	08	1157 E	1212 D	N24 E25		5043	15 D 1	3	1200		3.00			
CAPRI-S	08	1347 E	1603 D	N09 W70		5032	16 D 1	1	1554	1.00	3.70			
	08	2107	2130	N12 E90		5048	23 16	2		4.90			18	
	08	2122												
WENDEL	09	0805	0818 D	N06 E42		5045	13 D 1				4.00			
	09	0825 E	0849 D	N08 W23		5041	24 D 1				4.00			
	09	0828 E	0915 D	N09 W24		5041	47 D 1	3	0830		2.00			
CAPRI-G	09	0842 E	0915 D	N16 W44		5035	33 D 1	3	0845		2.00			
	09	0945 E	0958 D	N12 W56		5035	13 D 1	3	0955		4.00			
	09	0947 E	1013	N12 W55		5035	26 D 1				4.00			
{WENDEL WENDEL	09	1135 E	1152 D	N16 W50		5035	17 D 1	3	1139		3.00			
	09	1140 E	1201	N16 W50		5035	21 D 1				3.00			
	09	1205 E	1225 D	N12 W57		5035	20 D 16	2	1207		5.00			
{CAPRI-G ZURICH	09	1210 E	1230 D	N12 W54		5035	20 D 1	3	1212	2.00	3.80			
	09	1302 E	1310	S12 W35		5039	8 D 1	3	1302		2.00			
	09	1715	1757	N15 W67		5035	42 2	2		5.80			18	
SAC PEAK	09	1800	1842	N19 W57		5035	42 16	2		4.80			17	
	09													
	09													
{WENDEL WENDEL UCCLE	10	1006 E	1122 D	N24 W70		5035	76 D 2				10.00			
	10	1010 E	1032 D	N13 W69		5035	22 D 1				4.00			
	10	1450	1510	S08 W47		5039	20 1	2	1455	3.50				

# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	APPROX. LAT.	MER. DIST.	McMATH PLACE REGION				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>o</sub>		MAX. INT. %	
UCCLE { SAC PEAK { MCMATH	10	1518	1530	N26	E03	5043	12	16	2	1521	4.00			17		
	10	1737	1810	S08	W51	5039	33	1	1		3.20	2.25				
	10	1738	1758	S06	W52	5039	20	1	1	1740						
	11	1048	1120	N09	W85	5035	32	1	4							
	CAPRI-G { CAPRI-G { UCCLE { CAPRI-G { CAPRI-S { CAPRI-G { CAPRI-G { STOCKHOLM { ZURICH { SAC PEAK { HAWAII	11	1109	E 1113	N15	W74	5035	4	1	3	1110		3.00		Slow S-SWF	
		11	1109	E 1117	N13	E90	5052	8	1	3	1110					
		11	1130	1135	S17	W82	5036	5	16	2	1135	3.00	6.00			
		11	1135	E 1155	S16	W77	5036	20	1	3	1135		4.00			
		11	1137	E 1152	S19	W66	5036	15	1	2	1142	1.50	5.00			
		11	1402	E 1415	S05	E60	5039	13	1	3	1404		2.00			
11		1402	E 1445	N22	E90	5054	43	1	3	1404						
11		1413	E 1420	N26	E90	5054	7	1	3	1418		1.00				
11		1411	E 1413	N16	W74	5035	2	1	2	1411	2.00					
11		1810	1845	N12	E80	5052	35	2	2		5.80			20		
11	1810	1846	N16	E88	5052	36	1	3	1814	3.40						
STOCKHOLM MITAKA LOCARNO LOCARNO SAC PEAK { LOCARNO { MCMATH	12	0913	E 0938	S11	W69	5039	25	1	3	0926	1.50	3.30		G-SWF		
	13	0021	E 0035	N11	E56	5052	14	1	1	0025	1.10	2.10	4.38		165	
	13	0800	E 0815	N13	E53	5052	15	1	3	0800		2.00				
	13	1210	E 1240	N12	W26	5045	30	16	3	1210		2.00				
	13	1500	1540	N23	E65	5054	40	1	2		2.10			14		
	13	1550	1615	N11	E57	5052	25	16	3	1610		3.00				
	13	1550	1625	N12	E55	5052	35	1	2	1608		2.50				
	14	0018	E 0039	N10	E47	5052	21	1	1	0024	.41	.64				
	14	0020	E 0038	N13	E48	5052	18	1	2	0022	3.30	5.50		107		
	14	0030	E 0052	N24	E56	5054	22	16	1	0037	1.92	4.19	4.35	227		
CAPRI-G CAPRI-G CAPRI-G CAPRI-S { LOCARNO { CAPRI-G { CAPRI-G { CAPRI-G	14	1055	E 1125	N14	E47	5052	30	1	1	1103		3.00		Slow S-SWF		
	14	1243	E 1325	N26	E52	5054	42	1	2	1245		3.00				
	14	1359	E 1434	N28	E65	5054	35	1	2	1404	2.00	5.20				
	14	1405	E 1430	N24	E58	5054	25	16	3	1430		3.00				
	14	1409	E 1432	N28	E65	5054	23	1	3	1413		4.00				
	14	1440	E 1500	N13	E44	5052	20	1	3	1442		4.00				
	14	1540	E 1556	S16	E45	5053	15	1	1	1555		3.00				
	15	0102	0140	N07	W52	5045	38	16	2	0107	4.50	7.50				
	15	0104	E 0117	N10	W49	5045	13	1	1	0107	2.67	4.25	2.71	149		
	15	0750	0816	S12	W04	5049	26	1	3			4.00				
CAPRI-G CAPRI-G CAPRI-G CAPRI-G CAPRI-G CAPRI-G CAPRI-S { WENDEL { CAPRI-G { WENDEL { CAPRI-G { WENDEL { HAWAII	15	0757	E 0812	S13	W03	5049	15	1	3	0800		3.00		Slow S-SWF		
	15	0904	E 0910	N27	E35	5054	6	1	3	0906		4.00				
	15	0904	E 0935	N11	W01	5048	31	1	3	0906		4.00				
	15	0912	0938	N17	E04	5048	26	16	3			6.00				
	15	1137	E 1240	N26	E37	5054	63	16	3	1154		7.00				
	15	1139	E 1145	N30	E48	5054	6	16				7.00				
	15	1215	1300	N31	E50	5054	45	2				9.00				
	15	1216	E 1244	N32	E47	5054	28	1	3	1217	2.00	3.80				
	15	1223	1251	N12	E31	5052	28	1	3	1230		4.00				
	15	1225	1244	N09	E30	5052	19	16				6.00				
HAWAII MITAKA	15	1902	1930	N12	E24	5052	28	1	3	1904	2.30	2.60				
	16	0017	E 0020	N28	E27	5054	3	1	1	0017	.89	1.39	3.44	120		



# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	ORS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. MER. DIST.				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>o</sub>	MAX. INT. %
MITAKA	16	0024	0043	N27 E35	5054	19	16	1	0031	3.20	5.18	2.54	134
MITAKA	16	0034	0038	N28 E23	5054	4	1	1	0034	.59	.83		96
{ MITAKA	16	0050	0100	N27 E35	5054	10	16	1	0050	3.12	5.05	4.29	183
{ HAWAII	16	0050	0144 D	N30 E33	5054	54 D	16	3	0052	4.70	7.20		
{ NIZAMIAH	16	0307	0320	N28 E21	5054	13	1	1	0312	1.82	2.35	2.10	107
{ MITAKA	16	0319 E	0326	N24 E22	5054	7	1	1	0319	1.34	1.77	2.33	115
{ MITAKA	16	0319 E	0329	N27 E34	5054	10 D	16	1	0319	3.80	6.16	2.55	143
{ MITAKA	16	0353	0424	N26 E30	5054	31	16	1	0403	3.28	5.31	4.04	118
{ NIZAMIAH	16	0357	0423	N31 E30	5054	26	16	1	0408	3.04	4.42	2.30	
{ KODAIKUN	16	0402 E	0412	N11 E20	5052	10 D	2	2	0402	5.50	8.20	2.00	
{ CAPRI-G	16	0841	0953	N11 E16	5052	72	2	3	0916	4.00	4.20		
{ CAPRI-S	16	0844 E	0954 D	N08 E18	5052	70 D	1	2	0922	5.00	5.40		
{ ARCE TRI	16	0918 E	0924 D	N11 E17	5052	6	2	4	0918				
{ ARCE TRI	16	0918 E	0925 D	N11 E17	5052	7 D	2	2					
{ R O HERST	16	0924 E	0950	N10 E17	5052	26 D	1	2	0928	1.30	1.40	2.69	86
{ ARCE TRI	16	0925 E	0952 D	N11 E17	5052	27	2	4					
{ KODAIKUN	16	0926 E	0937	N29 E37	5054	11 D	2	1	0926	4.80	5.18	2.00	118
{ CAPRI-G	16	1007 E	1102 D	N29 E24	5054	55 D	1	3	1015		3.00		
{ CAPRI-G	16	1118 E	1142 D	N27 E22	5054	24 D	1	3	1121		3.00		
{ CAPRI-G	16	1119	1142 D	S13 W15	5049	23 D	1	3	1123		3.00		
{ CAPRI-G	16	1202 E	1250 D	N14 E55	5058	48 D	1	3	1214		3.00		
{ CAPRI-S	16	1206 E	1258 D	N12 E51	5058	52 D	1	2	1236	2.00	3.50		
{ CAPRI-G	16	1226 E	1250 D	N27 E22	5054	24 D	1	1	1228		3.00		
{ CAPRI-G	16	1414 E	1430 D	N27 E29	5054	16 D	1	1	1415		4.00		
{ MCMATH	16	1625	1650	N28 E27	5054	25	1	2	1629		2.00		
{ UCCLE	16	1632	1640	N29 E26	5054	8	1	5	1708	4.00			
{ UCCLE	16	1703	1708 D	N10 E13	5052	5 D	16	3	2238	2.50			
{ HAWAII	16	2236	2250	N12 E08	5052	14	1	3			2.70		
{ HAWAII	17	0132	0148	N28 E12	5054	16	1	3	0134	3.30	4.10		
{ WENDEL	17	0657 E	0804	N28 E21	5054	67 D	2				9.00		
{ WENDEL	17	0940	0958 D	N24 E12	5054	18 D	16				5.00		
{ WENDEL	17	1000	1011	N25 E16	5054	11	16				5.00		
{ ZURICH	17	1005 E	1011	N27 E15	5054	6 D	1	2	1005		2.00		
{ CAPRI-G	17	1010 E	1022 D	N27 E11	5054	12 D	1	1	1012		4.00		
{ WENDEL	17	1155 E	1221	N27 E06	5054	26 D	16	1			6.00		
{ CAPRI-G	17	1122 E	1127 D	N17 E90	5060	5 D	1	1	1123		3.00		
{ WENDEL	17	1157	1208	N10 W01	5052	11	1	2			4.00		
{ ZURICH	17	1210	1234	N27 E05	5054	24	16				3.60		
{ STOCKHOLM	17	1213	1233	N26 E10	5054	20 D	1	3	1217	3.00			
{ LOCARNO	17	1215 E	1240	N26 E08	5054	25 D	2	2	1215		9.00		
{ CAPRI-G	17	1227 E	1240 D	N25 E07	5054	13 D	1	1	1230		3.00		
{ ZURICH	17	1225 E	1228	N19 E53	5058	3 D	1	2	1225		3.00		
{ CAPRI-G	17	1317 E	1320 D	N18 E48	5058	3 D	1	1	1320		3.00		
{ WENDEL	17	1431	1506 D	N12 W01	5052	35 D	1	2	1432		2.00		
{ ZURICH	17	1432	1510 D	N11 W00	5052	38 D	1	1	1501		4.00		
{ CAPRI-G	17	1455 E	1525 D	N12 E02	5052	30 D	1	2	1445		3.00		
{ ZURICH	17	1445	1510 D	N27 E12	5054	25 D	1	1			3.00		
{ WENDEL	17	1447	1510	N27 E10	5054	23	1	1			3.00		
{ CAPRI-S	17	1452 E	1609 D	N25 E05	5054	77 D	1	1	1559	3.00	3.30		
{ CAPRI-G	17	1455 E	1525 D	N25 E10	5054	30 D	1	1	1457		3.00		
{ CAPRI-G	17	1510 E	1525 D	N16 E50	5058	15 D	1	1	1512		4.00		
{ SAC PEAK	17	1542	1602	N26 E04	5054	70	1	2		2.10			17

# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	LOCATION					TIME	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH He		MAX. INT. %
					PLAGE	REGION									
CAPRI-G WENDEL ZURICH	17 1959	1543	1550 D	N27 E07	5054	7 D	1	1	1545		4.00				
	17 1544	E 1603 D		N26 E06	5054	19 D	16				7.00				
	17 1555	E 1604 D		N27 E03	5054	9 D	1	1	1555		4.00				
NIZAMIAH MITAKA WENDEL	18 0303	0318	0308	N30 E13	5054	15	1			1.82	2.32	1.80			
	18 0628	E 0654	0633	N28 E07	5054	26 D	26	1	0308	5.67	6.86	2.64	227		
	18 0655	E 0725		N25 E05	5054	30 D	1		0634		4.00				
WENDEL WENDEL UCCLE	18 0715	0728		N17 E28	5058	13	1				3.00				
	18 0755	0805 D		N30 E06	5054	10 D	1				4.00				
	18 1048	1055		N21 E30	5058	7	1	4							
LOCARNO ZURICH	18 1340	E 1345 D		N25 W05	5054	5 D	2	4							
	18 1535	1551 D		N25 W01	5054	16 D	1	1	1535		5.00				
	18 1535	1555	1542	N25 W05	5054	20	1	2		2.60	2.50		18		
{SAC PEAK MCMATH	18 1535	1615	1541	N26 W00	5054	40	1	1	1541		2.50				
	18 1807	1828	1810	N13 E36	5058	21	1	2	1810		2.50		17		
	18 1807	E 1832	1812	N13 E36	5058	25 D	1	2		2.70					
{CLIMAX HAWAII	18 1807	1834	1811	N17 E42	5058	27	1		1811	2.40	3.80				
	18 1808	1816 D	1812	N16 E35	5058	8 D	1	3	1812	2.90	2.10		15		
	18 1834	2050 D	1839	N27 E02	5054	136 D	1	2	1839						
{SAC PEAK MCMATH	18 1842	19.5	1902	N30 E05	5054	33	1	2		2.30	2.10				
	18 2057	2121	2058	N08 W04	5052	24	1	2	2058		2.20		17		
	18 2057	2129 D		N28 E01	5054	32 D	1	2	2119	3.20	3.60				
{SAC PEAK HAWAII	18 2215	2235	2220	N11 W17	5052	20	1	2		3.30					
	18 2218	2234	2219	N10 W17	5052	16	1	3	2219						
	19 0104	0112	0107	N28 W12	5054	8	1	1	0105	.89	1.11	3.27	98		
MITAKA MITAKA MITAKA	19 0228	0245		N28 W15	5054	17	1	1	0237	.89	1.11	1.62	100		
	19 0244	0309	0244	N28 W01	5054	25	1	1	0245	.30	.37	2.01	143		
	19 0514	0521	0516	N25 W10	5054	7	1	1	0516	1.82	2.19	1.50			
{MITAKA MITAKA NIZAMIAH	19 0515	E 0533		N25 W12	5054	18 D	1	1	0520	1.48	1.76	3.01	149		
	19 0537	0553 D	0543	N25 W12	5054	16 D	1	1	0541	2.21	2.67	3.31	120		
	19 0544	E 0555	0547	N26 W10	5054	11 D	1	1	0547	3.65	4.38	1.90			
{WENDEL WENDEL	19 0732	E 0810 D		N28 E38	5059	38 D	16				6.00				
	19 0836	E 0847 D		N25 W10	5054	11 D	1				3.00				
	19 0836	E 0925 D		N15 E14	5058	52 D	2	3	0845	5.00	5.50				
{CAPRI-S WENDEL	19 0836	E 0910		N15 E15	5058	34 D	16				6.00				
	19 0842	E 0855 D		N14 E13	5058	13 D	16	3	0845		6.00				
	19 0915	E 0928 D		N12 W17	5052	13 D	1				3.00				
{WENDEL WENDEL	19 0900	0913		N25 W06	5054	13	16				8.00				
	19 0902	E 0935 D		N25 W07	5054	33 D	1	3	0905	3.00	3.30				
	19 0906	E 0928 D		N29 W05	5054	22 D	1				3.00				
{CAPRI-G WENDEL	19 0935	E 0957 D		N29 W10	5054	22 D	1				3.00				
	19 1027	E 1118		N27 W17	5054	51 D	16	3	0936		3.00				
	19 1035	1112		N28 W20	5054	37	16	3	1055		5.00				
{UCCLE STOCKHOLM	19 1036	1130	1043	N27 W18	5054	54	2	4		6.00	6.30				
	19 1038	1109		N26 W16	5054	31	2	3	1043		6.00				
	19 1038	1115		N29 W17	5054	37	3	3	1056	5.00	6.50				
{ONDREJOV CAPRI-S	19 1039	E 1130 D		N28 W10	5054	51 D	2	3	1057	7.00	8.00				
	19 1044	E 1205 D		N24 W10	5054	81 D	2	3	1047		8.00				
	19 1050	E 1120		N26 W15	5054	30 D	26								
{CAPRI-G UCCLE	19 1106	1122		N29 W06	5054	16	1				3.00				
	19 1107	1118		N29 W10	5054	11	1	3	1107		3.00				
	19 1151	E 1207 D		N13 W19	5052	16 D	1	3	1155		3.00				
CAPRI-G WENDEL ZURICH	19 1151	E 1207 D		N13 W19	5052	16 D	1	3							
	19 1151	E 1207 D		N13 W19	5052	16 D	1	3							
	19 1151	E 1207 D		N13 W19	5052	16 D	1	3							



# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	MAX. PHASE	APPROX.					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>o</sub>	MAX. INT. %		
					LAT.	LONG.									PLAGE DIST.
{CAPRI-G ZURICH {CAPRI-S ONDREJOV ZURICH {CAPRI-G ZURICH {MCWATH ZURICH {ZURICH ZURICH MCWATH	19	1357 E	1405 D		N12 W17	5052	8 D	1	3	1400		3.00		S-SWF	
	19	1400 E	1422 D		N12 W22	5052	22	1	2	1400		2.00			
	19	1427	1443 D		N26 W19	5054	16 D	1	3	1429	2.00	2.40			
	19	1428	1435		N28 W15	5054	7	2							
	19	1428	1440 D		N29 W18	5054	12 D	1	2	1428		3.00			
	19	1430 E	1437 D		N29 W13	5054	7 D	1	3	1434		3.00			
	19	1435	1458	1445	N12 W14	5052	23	1	2	1445		2.00			
	19	1445 E	1500 D		N11 W27	5052	15 D	1	2	1445		1.00			
	19	1453	1457		N25 W18	5052	4	1	2	1453		1.00			
	19	1605	1710	1625	N26 W16	5054	65	1	3	1625		2.50			
{NIZAMIAH MITAKA ARCETRI {ARCETRI CAPRI-G {ZURICH CAPRI-G ZURICH CAPRI-G CAPRI-G {SAC PEAK CAPRI-G WENDEL {CAPRI-S ZURICH {MCWATH CLIMAX HAWAII MITAKA	20	0429	0524	0503	N13 E54	5060	55	2	3	0503	3.04	5.61	2.60	S-SWF	
	20	0440 E	0535	0446	N14 E58	5060	55 D	16	1	0445	3.20	7.23	4.35		149
	20	0956 E			S35 E81	5062			3	0956	.70	4.00			
	20	1121 E	1140 D		N10 W40	5052	19	1	2						
	20	1128 E	1140 D		N17 W34	5052	12	1	2						
	20	1217 E	1240 D		N11 W36	5052	23 D	1	3	1219		3.00			
	20	1415	1427 D		N16 W03	5058	12 D	1	3	1415		1.00			
	20	1417 E	1432 D		N14 W02	5058	15 D	1	3	1425		3.00			
	20	1502	1504		N08 W40	5052	2	1	3	1502		1.00			
	20	1506 E	1525 D		N16 E10	5058	19 D	1	3	1508		3.00			
{CAPRI-G CAPRI-G {SAC PEAK CAPRI-G WENDEL {CAPRI-S ZURICH {MCWATH CLIMAX HAWAII MITAKA	20	1527 E	1535 D		N28 W27	5054	8 D	1	3	1530		3.00		S-SWF	
	20	1532	1655	1540	N16 E43	5060	83	1	2		2.90				24
	20	1533 E	1605 D	1540	N19 E45	5060	32 D	2	2	1540		6.00			
	20	1536	1619 D		N17 E45	5060	43 D	2	3	1539	4.00	9.00			
	20	1537 E	1619 D		N15 E45	5060	42 D	2	3	1550		6.00			
	20	1550 E	1617 D		N16 E47	5060	27 D	2	1	1552		7.00			
	20	1552 E			N17 E47	5060		1	1	2241	2.10	2.20			
	20	2237	2250	2241	N28 W39	5054	13	1	3	2240	2.30	3.80			
	20	2238 E	2249	2240	N27 W40	5054	11	1	3	2240	2.30	2.94			
	20	2356 E	2403		N27 W33	5054	7 D	1	1	2356	1.30	2.94	2.32		120
{SYDNEY MITAKA {KODAIKNL MITAKA NIZAMIAH CAPRI-G CAPRI-G CAPRI-G CAPRI-G {ZURICH CAPRI-S WENDEL {CAPRI-G CAPRI-G {LOCARNO CAPRI-G WENDEL ZURICH ONDREJOV LOCARNO UCCLE SCHAUTINS	21	0155	0250	0220	N10 W37	5052	55	2	1	0213	9.38	11.70	2.44	S-SWF	
	21	0158	0245	0205	N12 W33	5052	47	26	1	0200	6.50	8.50	1.80		106
	21	0200 E	0235		N12 W36	5052	35 D	2	2	0342	.41	.53	2.11		96
	21	0337	0345		N26 W34	5054	8	1	1	0538	2.43	4.00			
	21	0338 E	0355		N16 W01	5058	17 D	1	1	0538		2.00			
	21	0732 E	0755 D		N13 W45	5052	23 D	1	3	0734		2.00			
	21	0749 E	0755 D		N17 E29	5060	6 D	1	3	0751		2.00			
	21	0818 E	0822 D		N20 W09	5058	4 D	1	3	0820		2.00			
	21	0817 E	0825 D		N26 W44	5054	8 D	1	3	0817		3.00			
	21	0820 E	0829 D		N25 W42	5054	9 D	1	3	0822	2.00	3.50			
{WENDEL CAPRI-G CAPRI-G CAPRI-G {LOCARNO CAPRI-G WENDEL ZURICH ONDREJOV LOCARNO UCCLE SCHAUTINS	21	0822	0833		N27 W35	5054	11	1	3	0827		4.00		S-SWF	
	21	0825 E	0837 D		N28 W35	5054	12 D	1	3	0827		4.00			
	21	0845 E	0855 D		N19 E39	5060	10 D	1	3	0847		4.00			
	21	0900 E	0930 D		N13 W45	5052	30 D	2	2	0900		7.00			
	21	0903 E	1127 D		N14 W44	5052	144 D	2	3	0905		8.00			
	21	0905	0941 D		N15 W43	5052	36 D	2	2			10.00			
	21	0907 E	0942 D		N15 W44	5052	35 D	1	3	0907		6.00			
	21	0907 E	1009 D	0913	N13 W46	5052	62 D	2	2						
	21	0908	0930 D		N14 W35	5052	22 D	16	2	0930		2.00			
	21	0910 E			N13 W52	5052	73 D	2	2						

COMMERCE - STANDARDS - BOULDER

## SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.				McMATH PLAGE REGION	TIME	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH Ha	MAX. INT. %
CAPRI-S STOCKHOLM SALT SJOBOD ARCETRI ARCETRI UCCLE ARCETRI WENDEL WENDEL ZURICH CAPRI-G WENDEL CAPRI-S MCMATH ONDREJOV ONDREJOV SAC PEAK HUANCAYO CLIMAX SAC PEAK MCMATH CLIMAX	MAR 1959															
	21	0911 E	0954 D		N12 W43		5052	43 D	2	3	0912	4.00	6.00			Slow S-SWF
	21	0914 E	1043		N15 W40		5052	29 D	2	3	0918	5.50	8.30			
	21	0914 E	1043		N15 W40		5052	89 D	2							
	21	0915 E	0940 D		N15 W50		5052	25	2							
	21	0915 E	1046 D		N18 W40		5052	91	2							
	21	0917 E			N15 W45		5052		3	4	0917	10.00	13.00			
	21	0933 E			N15 W50		5052		1	3	0933	1.70	2.80			
	21	0910 E	1050 D		N20 W33		5054	100 D	16	3	0940	3.30	8.00			
	21	0933 E	0953 D		N18 W40		5054	20	1	3	0940		4.60			
	21	0951 E	1005 D		N30 W30		5054	14 D	1	3	0952		3.00			
	21	0952	0956		N28 W35		5054	4	1	3	1312		1.00			
	21	1300 E	1400 D		N30 W35		5054	60 D	16	3	1312		6.00			
	21	1308 E	1346 D		N25 W47		5054	38 D	16	3	1331	4.00	6.00			
	21	1309	1401 D		N25 W46		5054	52 D	2	1	1314		6.90			
	21	1310	1325 D		N27 W48		5054	15 D	1				3.00			
	21	1312	1344		N27 W45		5054	32	2							
	21	1617 E	1718 D		N17 E01		5058	61 D	2	2		9.00	12.00		20	
	21	1645	1712	1700	N28 W49		5054	27	2	2	1656	6.70		6.20		
	21	1652	1710	1656	N28 W46		5054	18	2	2	1701	8.30			17	
	21	1658 E	1710		N30 W52		5054	12 D	2	2		2.30	2.60			
	21	1747	1942	1802	N16 W05		5058	115	1	2	1811					
	21	1750 E	1900 D		N16 W05		5058	70 D	1	1	1836	2.10				
21	1821	1911	1836	N29 W44		5054	50	1								
HAWAII NIZAMIAH WENDEL WENDEL WENDEL CAPRI-S MCMATH KANZELHOHE CAPRI-S SAC PEAK SAC PEAK MCMATH	22	0116 E	0154		N24 W16		5058	38 D	1	2	0120	3.10	3.70			G-SWF
	22	0403	0421	0411	N24 W52		5054	18	2	2	0411	2.74	5.42	2.80		
	22	0716 E	0740 D		N08 E65		5061	24 D	1				4.00			
	22	0728	0737		N18 E27		5060	9	1				3.00			
	22	0731 E	0819		N18 E20		5060	48 D	16				5.00			
	22	0754 E	0824 D		N15 E20		5060	30 D	1	1	0803	2.00	2.20			
	22	1339	1545	1345	N30 W50		5054	126	16	1	1345		4.00			
	22	1350	1425 D		N30 W42		5054	35 D	26							
	22	1359 E	1516 D		N27 W49		5054	77 D	2	2	1403	3.50	7.00			
	22	1450 E	1505 D		N16 W17		5058	15 D	1	2		3.30			15	
	22	1450 E	1615 U		N30 W52		5054	85 D	1	2		3.50			15	
	22	1557	1628	1600	N24 W26		5058	31	1	1	1600		2.00			
	23	0313 E	0329	0318	S17 W61		5053	16 D	16	1	0318	1.01	2.86	2.50		
	23	0838 E	0842 D		N13 W31		5058	4 D	1	1	0839		3.00			
	23	0850 E	0910		N15 W28		5058	20 D	16	2	0900		3.00			
	23	0850 E	0920 D		N16 E06		5060	30 D	1	2	0920		1.00			
LOCARNO KANZELHOHE CAPRI-G LOCARNO CAPRI-S LOCARNO KANZELHOHE CAPRI-G CAPRI-S MCMATH LOCARNO CAPRI-G ARCETRI	23	0855 E	0947		N17 E07		5060	52 D	2				3.00			S-SWF
	23	0931 E	1002 D		N19 E03		5060	31 D	1	1	0932		3.00			
	23	1040	1105 D		N18 W35		5058	25 D	16	2	1100		3.00			
	23	1042 E	1102 D		N19 W33		5058	20 D	1	2	1044	2.00	2.50			
	23	1040 E	1205 D		N18 E06		5060	25 D	1	2	1100		1.00			
	23	1115	1150		N17 E07		5060	35	2							
	23	1201 E	1310 D		N21 E29		5061	69 D	1	1	1201		5.00			
	23	1202 E	1240 D		N22 E23		5061	38 D	1	3	1205	2.50	2.90			
	23	1308	1330	1312	N18 E10		5060	22	1	1	1315		2.20			
	23	1311	1325	1317	N15 E19		5060	14	1	2			2.00			
	23	1325 E	1430 D		N28 W65		5054	65 D	1	3	1342		5.00			
	23	1326 E			N30 W70		5054		1	3	1326		2.50			

# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT			
		START	END	MAX. PHASE	LAT.				MER. DIST.	APPROX.	TIME — UT	MEAS. AREA Sq. Deg.		COBR. AREA Sq. Deg.	MAX. WIDTH Ha	MAX. INT. %
LOCARNO MCMATH CAPRI-S LOCARNO, UCCLE LOCARNO MCMATH SAC PEAK LOCARNO UCCLE CAPRI-G CAPRI-G LOCARNO MCMATH SAC PEAK LOCARNO CAPRI-S UCCLE	23	1328	1405	1336	N26	W68	5054	37	16	2			3.00	slow S-SWF		
	23	1328	1550 D	1345	N28	W75	5054	142 D	16	1	1345		3.50			
	23	1333	1409 D		N23	W68	5054	36 D	2	3	1347	2.00	6.60			
	23	1500		1505	N24	W74	5054	15	1	2			2.00			
	23	1518	1533	1527	N12	W40	5058	15	16	4			8.00			
	23	1518	1540	1524	N10	W36	5058	22	2	2			2.08			
	23	1520	1534	1524	N13	W39	5058	14	1	1	1524					
	23	1520	1537	1525	N12	W37	5058	17	1	2		3.40				
	23	1527	1555		N18	E02	5060	28	1	2	1530		2.00			
	23	1528	1533		N19	E01	5060	5	1	4						
	23	1528	1600 D		N19	E07	5060	32 D	1	2	1534		4.00			
	23	1530	1600 D	1552	N15	W35	5058	30 D	2	2	1552		6.00			
	23	1540	1550		N26	W65	5054	10	1	2	1543		2.00			
	23	1541	1552		N23	W66	5054	11	1	2	1545		1.00			
	23	1540	1704		N13	W38	5058	84	1	1	1558		2.25			
	23	1542	1645		N11	W38	5058	63	16	2						
	23	1544	1610 D		N09	W35	5058	26 D	2	2						
	23	1555	E 1636 D		N09	W35	5058	41 D	2	3	1606	5.00	6.00			
	23	1607	E 1655 D		N10	W40	5058	48 D	2	4						
	WENDEL CAPRI-G CAPRI-G CAPRI-G ATHENS WENDEL SCHAUINS CAPRI-S LOCARNO CAPRI-G LOCARNO WENDEL UCCLE CAPRI-G UCCLE WENDEL LOCARNO NEDERHORST KODAIKNL CAPRI-G CAPRI-G ZURICH CAPRI-S ZURICH WENDEL WENDEL LOCARNO ZURICH ZURICH CAPRI-G WENDEL WENDEL CAPRI-G ARCTRI	24	0645	E 0706 D		N25	E33	5061	21 D	16					7.00	slow S-SWF
		24	0645	E 0730 D		N26	E30	5061	45 D	1	3	0647			4.00	
		24	0651	E 0730 D		N25	E90	5068	39 D	1	3	0656				
		24	0701	0850 D	0730	N17	W04	5060	110 D	26	2	0730			10.00	
24		0705	0908		N19	W02	5060	123	26							
24		0706	0846	0738	N20	W02	5060	100 D	26				17.00			
24		0708	0844		N16	W06	5060	96	2							
24		0709	0852		N20	W05	5060	103 D	3	3	0743	12.00	12.60			
24		0710	0850	0738	N14	W09	5060	100 D	26	2		10.00	10.00			
24		0710	0850 D		S07	E39	5063	100 D	1	3	0713		3.00			
24		0840	0902	0850	S09	E40	5063	22	1	2			4.00			
24		0908	0937 D		N25	E31	5061	29 D	1	4		4.00				
24		0910	0925 D		N27	E32	5061	15 D	1	4						
24		0910	E 1006 D		N26	E30	5061	56 D	1	3	0912		3.00			
24		0958	E 1204 D		N22	W87	5054	126 D	3	4						
24		0958	1300 D		N31	W72	5054	182 D	3			22.00				
24		0959	1230 D	1105	N27	W60	5054	151 D	2	3		10.00				
24		1005	E 1045 D		N25	W75	5054	40 D	3							
24		1010	E 1037		N28	W75	5054	27 D	26	1	1010	3.90	15.60			
24		1013	E 1230 D		N27	W75	5054	137 D	2	2	1050		7.00			
24		1035	E 1138 D		N30	W79	5054	3	2	2						
24		1039	E 1139 D		N30	W75	5054	60 D	2	2	1039		11.00			
24		1103	E 1237 D		N30	W71	5054	94 D	2	2	1145	2.00	6.40			
24	1116	1125 D		N26	W82	5054	9 D	1	3	1116		2.00				
24	1044	E 1107 D		S09	E39	5063	23 D	1	4		4.00					
24	1045	1105		S07	E41	5063	20	1	3	1100		1.00				
24	1049	E 1056		S08	E40	5063	7 D	1	2	1049		1.00				
24	1102	1108 D		S08	E40	5063	6 D	1	2	1102		1.00				
24	1145	E 1230 D		N15	W80	5052	45 D	1	3	1150		5.00				
24	1146	E 1324 D		N11	W84	5052	98 D	26			18.00					
24	1219	E 1251 D		N25	E27	5061	32 D	1	4		4.00					
24	1228	E 1230 D		N25	E30	5061	2 D	1	3	1230		4.00				
24	1358	E 1415 D		S07	E39	5063	17	2	3	1405	1.70	2.20				

# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX. PHASE	APPROX.					M-MATH PLACE REGION	TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH H <sub>g</sub>	MAX. INT. %
					LAT.	MER. DIST.										
LOCARNO	24	1450 E	1510 D		S09	E36	5063	20 D	16	2	1500		5.00			G-SWF S-SWF
HAWAII	25	0040	0106	0044	N06	W90	5052	26	2	3	0044	2.00				
ATHENS	25	0600	0637		N24	W80	5059	37	2							
{KODAIKNL	25	0615 E	0623		N16	W62	5058	8 D	2	1	0615	2.90	6.60	2.30	106	
{ATHENS	25	0616	0640		N15	W65	5058	24	26							
CAPRI-G	25	0655 E	0725 D		N25	E74	5068	30 D	1	3	0658		5.00			
WENDEL	25	0831 E	1018 D		N23	E75	5068	107 D	2				9.00			
WENDEL	25	0850	0903 D		N08	E85	5068	13 D	16				6.00			
CAPRI-G	25	0942 E	0950 D		N16	W08	5060	8 D	1	3	0944		4.00			
CAPRI-G	25	0942 E	0950 D		N23	E15	5061	8 D	1	2	0944		3.00			
{CAPRI-G	25	1230 E	1232 D		N25	E74	5068	2 D	1	1	1230		4.00			
{MCMATH	25	1234 E	1500 D		N22	E80	5068	146 D	1	1	1256		3.00			
{STOCKHOLM	25	1255	1330		N22	E73	5068	35	1	3	1257	1.50	6.00			
{CAPRI-G	25	1345 E	1352 D		N25	E74	5068	7 D	1	1	1347		4.00			
MCMATH	25	1307	1410	1313	N24	E13	5061	63	1	1	1313		2.10			
STOCKHOLM	25	1415	1450 D		S10	E25	5063	35 D	16	3	1417	3.00	3.30			
MCMATH	25	1443	1501	1450	S08	E23	5063	18	1	1	1450		2.00			
MCMATH	25	1538	1552	1545	S08	E20	5063	14	1	1	1545		2.00			
CAPRI-G	26	0731 E	0740 D		N20	W01	5061	9 D	1	1						Slow S-SWF
{UCCLE	26	1120 E			N18	W05	5061	2	2	4	1120	10.00				S-SWF
LOCARNO	26	1130 E	1150		N14	W03	5060	20 D	16				5.00			
CAPRI-G	26	1300 E	1325 D		N28	E12	5061	25 D	1	2	1302		4.00			
{STOCKHOLM	26	1249	1310		N22	E58	5068	21	1	1	1254	1.80	3.60			Slow S-SWF
{CAPRI-G	26	1300 E	1325 D		N26	E60	5068	25 D	1	2	1302		4.00			
UCCLE	26	1530 E			N25	E57	5068	1	1	4						S-SWF
{SAC PEAK	26	2100	2147 U	2107	N25	E57	5068	47 D	2	2	2110	5.90	19.90		16	S-SWF
{HAWAII	26	2102	2128		N27	E56	5068	26	2	1		8.70				
MITAKA	27	0148 E	0200		N25	E54	5068	12 D	2	1	0150	6.81	14.50	2.90	169	Slow S-SWF
CAPRI-S	27	0839 E	0851 D		N22	W09	5061	12 D	1	1	0842	3.00	3.30			
LOCARNO	27	1046	1108		N24	E49	5068	22	1	3	1100		4.00			
LOCARNO	27	1240	1320		N25	W12	5061	40	16	3	1300		6.00			
LOCARNO	27	1340	1350	1343	N22	W12	5061	10	1	3			1.00			
LOCARNO	27	1448	1506	1450	N33	W16	5061	18	1	3	1520		2.00			
{LOCARNO	27	1517	1535		N25	W13	5061	18	16	3	1523		5.00			
{MCMATH	27	1518 E	1535		N25	W23	5061	17 D	1	1			2.50			
HAWAII	28	0034	0110	0035	S09	W08	5063	36	1	3	0035	2.50	2.50			
CAPRI-G	28	0650 E	0720 D		N14	E46	5071	30 D	1	3	0652		3.00			
CAPRI-G	28	0710 E	0720 D		N26	E35	5068	10 D	1	3	0712		3.00			S-SWF
CAPRI-G	28	1523 E	1550 D		N14	E46	5071	27 D	1	3	1525		3.00			
MCMATH	28	1549	1625	1552	N24	E36	5068	36	1	2	1552		2.10			S-SWF
{MCMATH	28	1725	1840	1733	N22	W32	5061	75	2	2	1737		4.50		18	
{SAC PEAK	28	1727	1810	1735	N23	W31	5061	43	2	2		5.20				
MCMATH	28	1947	2010	1949	N22	W28	5061	14	1	1	1949		2.10			
{MCMATH	28	2113	2240 D	2126	N25	W32	5061	87 D	3	1	2126		11.00			
HAWAII	28	2114	2216	2126	N24	W32	5061	62	3	3	2126	1.50	2.10			S-SWF
{SAC PEAK	28	2115	2247	2127	N23	W31	5061	92	2	2		8.00			30	
{CLIMAX	28	2146 E	2238		N23	W36	5061	52 D	2		2147	6.10				
ATHENS	29	0801 E	0848		N17	E37	5071	47 D	2							S-SWF

# SOLAR FLARES

MARCH 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	APPROX. LAT.	MER. DIST.				TIME — UT	MEAS. AREA Sq. Deg.	COOR. AREA Sq. Deg.	MAX. WIDTH He		MAX. INT. %	
LOCARNO	MAR 1959	29 0830	0930	N13 E31	5071	60	2	2	0900		4.00		S-SWF  18		
		29 1050 E	1140	S35 W32	5065	50 D	1	2	1100		2.00				
		29 1115 E	1150	N29 E27	5068	35 D	16	2	1130		2.00				
		29 1107	1150 D	N21 W32	5061	43 D	2	2	1150		6.00				
		29 1120 E	1155 D	N25 W42	5061	35 D	2	2							
		29 1121 E		N21 W44	5061		1	3							
		29 1250 E	1305 D	N20 W33	5061	15 D	16	2	1305		2.00				
		29 1515	1620 D	N26 E19	5068	65 D	2	2	1620		3.00				
		29 1520	1625 U	N26 E20	5068	65 D	1	2		3.20					
		29 1525	1550	N12 E36	5071	25	1	2	1630		2.00				
{ SAC PEAK	29 2145	2250	N12 E26	5071	65	1	2	2209	2.20	3.50	4.20	G-SWF  17			
	29 2207 E	2236	N14 E26	5071	29 D	1	2	2344	2.60	3.00					
	29 2342	2400 D	N22 E08	5068	18 D	1	2								
CAPRI-G	30 0912 E	0915 D	□			3 D	1	1	0912		3.00		18		
	30 1020 E	1023 D	□			3 D	1	1	1020		3.00			14	
	30 1140 E	1142 D	□			2 D	1	1	1140		3.00				16
	30 1742	1755	N26 E04	5068	13	1	2		2.50						
{ SAC PEAK	30 2215	2250	N24 W58	5061	35	1	2		3.30			15			
	30 2216 E	2224 D	N23 W58	5061	8 D	1	2	2220	2.30	5.20					
	30 2240	2302	N29 E09	5068	22	1	2		2.60						
HAWAII	31 0140 E	0158	N26 E10	5068	18 D	1	3	3	0144	2.20	2.60		15		
	31 0758 E	0810	N22 W33	5070	12 D	16	2	2	0800	4.00					
	31 1253 E	1259	N13 E07	5071	6 D	1	2	2	1255	4.00					
	31 2132	2156	N33 W02	5068	24	2	3	3	2132	7.20	10.00				
{ SAC PEAK	31 2140 E		N31 W00	5068		16	1			4.70					

COMMENCE - STANDARD - END

CAPRI G ANACAPRI - GERMAN  
CAPRI S ANACAPRI - SWEDISH  
GOOD HOPE ROYAL OBSERVATORY, CAPE OF GOOD HOPE  
KIEV\* KIEV UNIVERSITY  
KODAIKANAL KODAIKANAL  
KRASNAYA KRASNAYA PAKHRA  
MOSCOW NIZHIR

MOSCOW-G  
R O EDIN  
R O HERST  
SAC PEAK  
SCHAUTINS  
USNRL

MOSCOW - GAISH  
ROYAL OBSERVATORY, EDINBURGH  
GREENWICH ROYAL OBSERVATORY, HERSHONCEUX  
SACRAMENTO PEAK  
SCHAUTINS  
UNITED STATES NAVAL RESEARCH LABORATORY

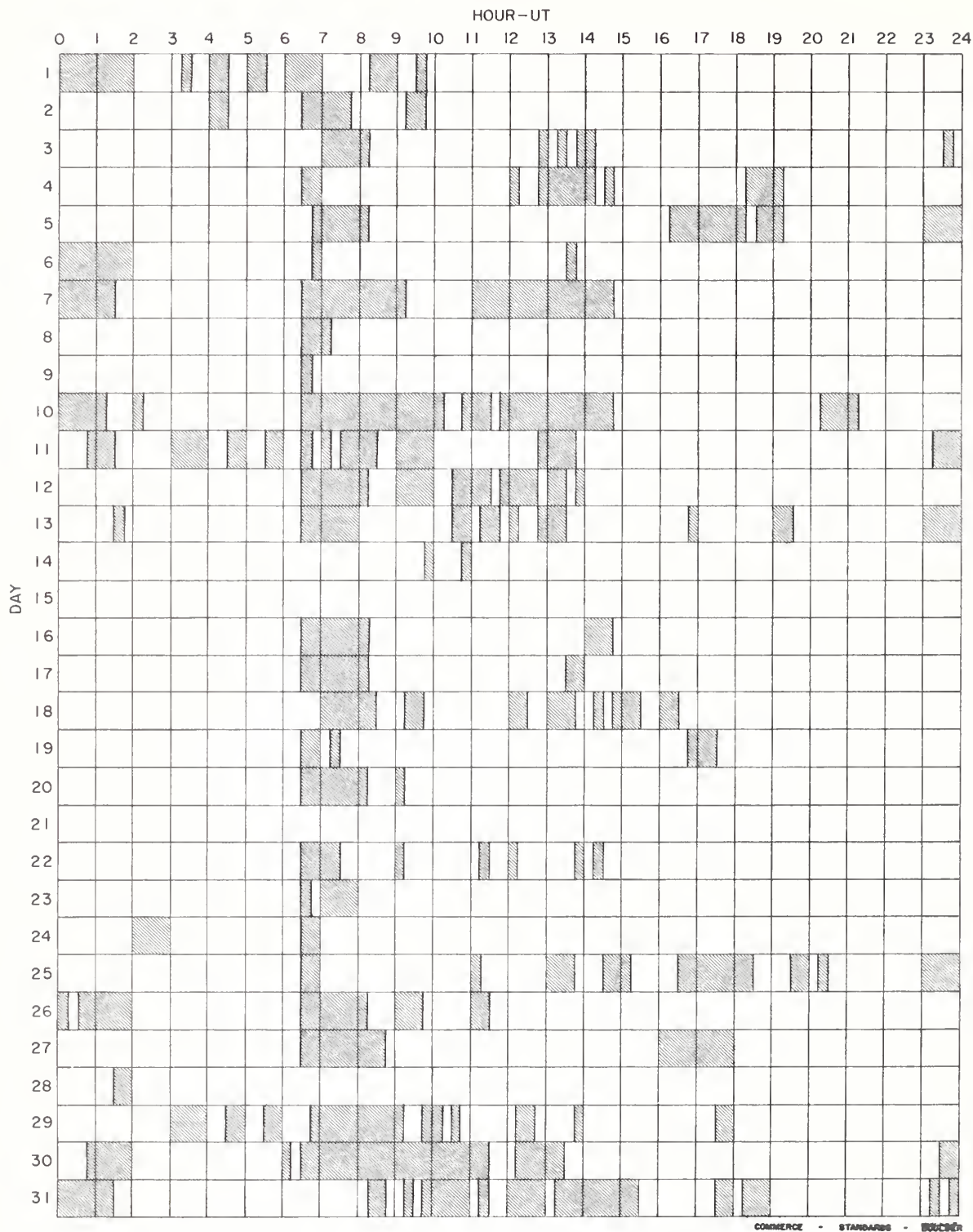
SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE  
ARBITRARY UNITS (0-40), NOT PERCENT  
OF CONTINUOUS SPECTRUM.

E - LESS THAN & - PLUS  
D - GREATER THAN - - MINUS  
U - APPROXIMATE □ - NOT REPORTED



## INTERVALS OF NO FLARE PATROL OBSERVATIONS

MARCH 1959



## Stations Include:

Anacapri (Swedish)	Mitaka
Arcetri	Nizamia
Climax	Royal Greenwich Observatory
Dunsink	Herstmonceux
Hawaii	Sacramento Peak
Huancayo	Uccle
Locarno	Zurich

## SUBFLARES

110

Noted as follows: Date-Universal Time-Coordinates

FEBRUARY 1959

MC MATH	01	1439	N11 E76	WENDEL	14	0907	E 508 E35	HAWAII	23	2210	N13 W44
MC MATH	01	1725	N12 W12	WENDEL	14	0907	E 507 E35	SAC PEAK	23	2217	E N15 W41
MEUDON	02	1502	N10 E60	WENDEL	14	1150	E N10 E29	SAC PEAK	23	2217	E N27 W70
SAC PEAK	02	1515	E N08 E60	*MEUDON	14	1240	E N12 E32	SAC PEAK	23	2220	N17 E10
SAC PEAK	02	1517	N16 E09	WENDEL	14	1427	E N09 E29	SAC PEAK	23	2222	N22 E00
MC MATH	02	1618	N03 E63	WENDEL	14	1454	E N10 E21	SAC PEAK	23	2255	N19 W37
MC MATH	02	1638	N17 E09	SAC PEAK	14	1555	N07 E20	HAWAII	23	2258	N19 W39
SAC PEAK	02	1640	N13 E08	SAC PEAK	14	2100	E N27 W65				
*SAC PEAK	02	1705	N12 E61	WENDEL	15	1220	E N06 E03	WENDEL	24	0950	E N14 E07
MC MATH	02	1755	N07 E62	SAC PEAK	15	1636	E N19 E70	WENDEL	24	1008	E N35 E24
SAC PEAK	02	1852	N16 E07	MC MATH	15	1730	E N12 E32	WENDEL	24	1020	E N24 E29
*MC MATH	02	1924	E N16 E08	MC MATH	15	1745	N05 E04	MC MATH	24	1434	N13 W30
SAC PEAK	02	2025	N24 W35					SAC PEAK	24	1442	E N12 W30
SAC PEAK	02	2230	N23 W35	*MEUDON	16	0835	N13 E40	MC MATH	24	1556	N20 W06
				*MEUDON	16	0845	N10 E28	SAC PEAK	24	1557	N19 W07
WENDEL	03	0829	E N12 E55	SAC PEAK	16	1000	N10 E38	MC MATH	24	1643	N22 W51
WENDEL	03	0835	E N16 E38	SAC PEAK	16	1555	N07 W12	MC MATH	24	1718	N18 W01
WENDEL	03	0855	E N17 E33	SAC PEAK	16	1627	N12 E36	SAC PEAK	24	1722	N17 W01
WENDEL	03	0904	E N15 E00	SAC PEAK	16	1630	N28 W45	MC MATH	24	1945	N18 W02
*R O HERST	03	1015	N14 E00	SAC PEAK	16	1825	N22 E40	SAC PEAK	24	1957	N17 W02
SAC PEAK	03	1702	N22 W44	SAC PEAK	16	2150	N06 W14	SAC PEAK	24	2042	N29 W35
				SAC PEAK	16	2227	N15 E53	SAC PEAK	24	2115	N22 W50
WENDEL	04	0910	E N16 W15					HAWAII	24	2116	N18 W52
WENDEL	04	1100	E N14 E39	WENDEL	17	0815	E N14 E47	*HAWAII	24	2352	N19 W12
WENDEL	04	1146	E N02 W57	WENDEL	17	0840	E N20 E55				
WENDEL	04	1226	E N22 W18	*MEUDON	17	0910	N17 E45	ARCETRI	25	0813	E N28 W45
WENDEL	04	1235	E N18 W15	STOCKHOLM	17	1148	E N13 E47	MEUDON	25	0935	N20 W18
WENDEL	04	1236	E N25 E77	WENDEL	17	1150	E N05 W30	MEUDON	25	0937	S33 E05
SAC PEAK	04	1507	N14 W51	MEUDON	17	1150	E N12 E32	STOCKHOLM	25	0944	E N07 E07
SAC PEAK	04	1605	S15 W16	MEUDON	17	1435	N20 E40	*MEUDON	25	1135	S33 E05
MC MATH	04	1606	S14 W16	MEUDON	17	1450	N20 E40	*MC MATH	25	1332	N17 W60
SAC PEAK	04	1910	N23 E65	*SAC PEAK	17	1454	E N19 E45	MC MATH	25	1420	E N24 W27
MC MATH	04	1912	N25 E66	*SAC PEAK	17	1502	N18 E43	*SAC PEAK	25	1445	E N28 W47
HAWAII	04	1914	N30 E67	*SAC PEAK	17	1540	N19 E44	MC MATH	25	1457	N29 W48
SAC PEAK	04	2207	N22 E77	MC MATH	17	1842	E N19 E42	SAC PEAK	25	1505	N28 W67
				HAWAII	17	2306	E N27 E42	SAC PEAK	25	1507	S32 E01
SAC PEAK	05	1505	N20 E31					MC MATH	25	1544	N17 W60
MC MATH	05	1514	N12 E20	WENDEL	18	1144	E N15 E35	SAC PEAK	25	1545	N17 W66
SAC PEAK	05	1910	S12 W32	WENDEL	18	1215	E N18 E34	MC MATH	25	1613	N28 W47
SAC PEAK	05	2147	N10 E33	MC MATH	18	1436	N19 E30	MC MATH	25	1800	E N29 W50
				MC MATH	18	1452	N13 E14	*SAC PEAK	25	1825	N20 W20
WENDEL	06	1046	E N15 W41	WENDEL	18	1454	E N13 E16	MC MATH	25	1840	N17 W66
MEUDON	06	1052	N12 E12	WENDEL	18	1456	E N18 E35	SAC PEAK	25	1902	N16 W66
STOCKHOLM	06	1052	N08 E15	MC MATH	18	1616	N12 W34	MC MATH	25	1903	E N17 W66
WENDEL	06	1057	E N10 E13	SAC PEAK	18	2057	N15 E25	HAWAII	25	1904	N12 W68
*SAC PEAK	06	1508	E N19 E10					MC MATH	25	1945	N22 W65
*SAC PEAK	06	1502	N24 W42	*MEUDON	19	0807	N22 E30	MC MATH	25	1948	N29 W50
SAC PEAK	06	2005	N27 E50	*WENDEL	19	0932	E N25 E23	HAWAII	25	2054	N27 W54
MC MATH	06	2008	N27 E50	*WENDEL	19	0934	E N20 E23				
SAC PEAK	06	2202	N11 W03	MEUDON	19	0950	N14 E04	HAWAII	26	0120	S02 E52
				WENDEL	19	1006	E N14 E04	WENDEL	26	0915	E N22 W70
WENDEL	07	0851	E N15 W55	MEUDON	19	1027	E N14 E00	*MEUDON	26	0918	E N23 W20
*MEUDON	07	1005	N15 W42	WENDEL	19	1034	E N13 E03	WENDEL	26	0935	E N23 W20
*STOCKHOLM	07	1005	N15 W42	WENDEL	19	1059	E N12 W45	*STOCKHOLM	26	0940	E N29 E47
WENDEL	07	1117	E N10 W53	WENDEL	19	1138	E N18 E22	WENDEL	26	1153	E S31 W10
WENDEL	07	1142	E N20 E46	WENDEL	19	1244	E S20 W81	WENDEL	26	1232	E N20 W04
SAC PEAK	07	1459	E N14 W57	*MC MATH	19	1459	E N18 E21	CAPRI-S	26	1237	E S32 E12
MC MATH	07	1557	N14 W60	*SAC PEAK	19	1503	E N18 E21	WENDEL	26	1246	E N24 W27
SAC PEAK	07	1722	N05 E08	UCCLE	19	1550	E N14 W02	WENDEL	26	1322	E N20 E00
MC MATH	07	1725	N06 E10	UCCLE	19	1625	E N20 E19	WENDEL	26	1329	N20 W55
MC MATH	07	1728	N20 W60	MC MATH	19	1802	N20 E23	WENDEL	26	1336	E N24 E09
HAWAII	07	2236	E N05 E11	MC MATH	19	1803	N20 E22	WENDEL	26	1347	E N32 W04
				MC MATH	19	1942	N21 E17	SAC PEAK	26	1500	N17 W78
WENDEL	08	0908	E S25 W67	SAC PEAK	19	1945	N21 E14	SAC PEAK	26	1742	N24 W38
MC MATH	08	1262	N28 E29	SAC PEAK	19	2000	N16 E30	SAC PEAK	26	1750	N24 W38
MC MATH	08	1613	N22 E21	MC MATH	19	2000	N16 E30	SAC PEAK	26	1807	N28 W60
MC MATH	08	1746	N14 E27	SAC PEAK	19	2000	N05 W04	SAC PEAK	26	1827	N23 W35
				MC MATH	19	2001	N06 W04	HAWAII	26	1830	E N22 W39
MEUDON	09	0925	N10 E90					SAC PEAK	26	1907	N24 W40
*MEUDON	09	1110	N13 E88	WENDEL	20	0747	E N35 W50	*SAC PEAK	26	2030	N24 W37
				WENDEL	20	0758	E N18 E18	*HAWAII	26	2032	E N22 W39
MEUDON	10	1017	E N09 E70	WENDEL	20	0800	E N25 W06	SAC PEAK	26	2107	N22 W03
WENDEL	10	1050	E N07 W46	UCCLE	20	1005	E N20 E11	HAWAII	26	2108	N23 W04
SAC PEAK	10	1520	E N10 E70	WENDEL	20	1256	E N20 E45				
SAC PEAK	10	1521	N17 W02	WENDEL	20	1314	E S06 W11	CAPRI-S	27	0706	E N21 W08
SAC PEAK	10	1712	N07 E70	*CAPRI-S	20	1317	E N05 W41	UNREJOV	27	0730	N17 E64
SAC PEAK	10	1822	N07 E70	*MC MATH	20	1320	E N07 W13	*WENDEL	27	0844	E N22 W11
SAC PEAK	10	2017	N08 E73	UNREJOV	20	1334	N13 W25	WENDEL	27	1309	E N24 W43
SAC PEAK	10	2122	N08 E64	MC MATH	20	1412	N26 W26	WENDEL	27	1353	E N18 W14
SAC PEAK	10	2155	N05 E67	WENDEL	20	1420	E N25 W12	WENDEL	27	1394	E S10 E10
				*MC MATH	20	1434	N16 E56	WENDEL	27	1359	E N23 W43
WENDEL	11	0854	E N07 E64	*SAC PEAK	20	1457	N17 E55	WENDEL	27	1402	E S04 E33
WENDEL	11	0956	E N22 W10	MC MATH	20	1500	N16 E30	WENDEL	27	1410	E S34 W26
WENDEL	11	0956	E N22 W10	MC MATH	20	1517	N26 W26	*CAPRI-S	27	1430	N21 W12
*CAPRI-S	11	1037	E N06 E59	CAPRI-S	20	1529	E N27 W23	*MC MATH	27	1430	E N24 W14
MEUDON	11	1443	N25 W05	WENDEL	20	1632	N26 W26	WENDEL	27	1442	E N15 E62
SAC PEAK	11	1149	E N09 E56	SAC PEAK	20	1632	N26 W27	MC MATH	27	1442	E N16 E66
MEUDON	11	1222	E N28 W15	MC MATH	20	1645	N09 W19	SAC PEAK	27	1451	E N22 W15
SAC PEAK	11	1502	N22 W15	MC MATH	20	1659	N20 E10	MC MATH	27	1550	N16 E66
MC MATH	11	1502	N22 W15	SAC PEAK	20	1700	N20 E12	*SAC PEAK	27	1555	E N22 W18
SAC PEAK	11	1537	N09 E54	SAC PEAK	20	1707	N07 W05	MEUDON	27	1626	N15 E90
MC MATH	11	1540	E N10 E62	MC MATH	20	1709	N09 W66	MC MATH	27	1725	N24 W16
SAC PEAK	11	1602	N21 W16	MC MATH	20	1720	N06 W16	MC MATH	27	1740	N24 W16
SAC PEAK	11	1602	N10 E56	SAC PEAK	20	1727	E N05 W15	MC MATH	27	1810	N24 W16
MC MATH	11	1603	N21 W16	MC MATH	20	1740	N26 W28	SAC PEAK	27	1815	N21 W17
MC MATH	11	1603	N10 E55	SAC PEAK	20	1745	N26 W28	*SAC PEAK	27	1815	N17 E59
SAC PEAK	11	1617	N24 W10	MC MATH	20	1905	N26 W28	*HAWAII	27	1850	N20 E58
MC MATH	11	1618	N23 W10	SAC PEAK	20	1955	N11 W13	MC MATH	27	1910	N24 W16
SAC PEAK	11	1645	N07 E53	HAWAII	20	2020	E N23 W02	SAC PEAK	27	2135	N18 W13
MC MATH	11	1648	N10 E62	SAC PEAK	20	2037	N20 E01	SAC PEAK	27	2135	N14 E78
MC MATH	11	1650	N22 W17					HAWAII	27	2140	E N18 E79
SAC PEAK	11	*1850	N22 W17	HAWAII	21	0020	E N22 W02				
MC MATH	11	1920	E N09 E60	*MEUDON	21	0940	N20 W50	WENDEL	28	0919	E S34 W36
SAC PEAK	11	1920	N10 E60	MEUDON	21	0945	N30 W30	UCCLE	28	0924	E N28 W33
SAC PEAK	11	1955	N24 W12	UCCLE	21	1000	E S34 E61	*CAPRI-S	28	1024	E N22 W23
MC MATH	11	1955	N24 W12	MC MATH	21	1310	E S34 E62	WENDEL	28	1329	E N20 W58
				MC MATH	21	1430	N28 W40	WENDEL	28	1354	E N01 W58
MEUDON	12	1106	N22 E85	MC MATH	21	1500	N27 W39	WENDEL	28	1424	E N24 W27
*MEUDON	12	1118	N12 E53	MEUDON	21	1520	N27 W39	SAC PEAK	28	1450	N26 W27
WENDEL	12	1127	E N30 W12	MC MATH	21	1522	E N28 W40	WENDEL	28	1500	N25 E22
WENDEL	12	1224	E N17 E72	MC MATH	21	1639	N29 W40	SAC PEAK	28	1547	S01 E49
WENDEL	12	1224	E N14 E48	MC MATH	21	1715	N26 W26	SAC PEAK	28	1557	N13 E58
MEUDON	12	1313	N20 E80	MC MATH	21	1745	S34 E58	SAC PEAK	28	1850	N22 W33
WENDEL	12	1315	E N34 E75	MC MATH	21	1815	N16 W41	HAWAII	28	1854	N19 W37
CAPRI-S	12	1350	E N08 E45	MC MATH	21	1820	N29 W40				
WENDEL	12	1445	N21 E2								

# SOLAR FLARES

JANUARY 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM. POR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	APPROX. LAT.	MGR. DIST.				PLAGE REGION	TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX WIDTH H <sub>g</sub>	MAX INT. %
VOROSHILOV SIMEIZ SIMEIZ SIMEIZ {GOOD HOPE	01	0015 E	0022 U	N16	W47	4936	7 U	1	2	0018		2.17		71	S-SWF
	01	0726 U	0738 U	S09	E87	4949	12 U	1	2	0729		6.40		68	
	01	0753 U	0820 U	S18	W66	4934	27	1	2	0755		3.80	2.20	76	
	01	0813 E	0850 U	N24	E40	4943	37 U	1	2	0827		1.80	2.00	60	
	01	0855 U	0950 U	S12	W62	4934	35 U	16	2	0855		6.50	2.60	128	
GOOD HOPE GOOD HOPE {GOOD HOPE KIEV SIMEIZ KIEV	01	0903 E	0942 U	S13	W64	4934	39 U	2		0903	2.90	6.60			S-SWF
	02	0639 E	0700 U	N20	W88	4936	21 U	1		0639	.10				
	02	0733 U	0745 U	S10	W70	4934	12	1		0738	.80	2.30			
	02	0911 U	0945 U	S08	W70	4934	34	2		0915	2.50	7.30			
	02	0911 U	1002 U	S09	W70	4934	51	16	2	0915		3.40			
VOROSHILOV GOOD HOPE GOOD HOPE UCCLE UCCLE	02	0915 E	0940 U	S07	W69	4934	25 U	16	1	0915		8.20	3.80	90	S-SWF
	02	1103 U	1117 U	N21	W90	4936	14	16	2					120	
	03	0337 U	0354 U	S30	W35	4948	17	1	2	0342	1.30	2.41		64	
	03	0708 U	0730 U	N13	W66	4936	22	1		0718	1.30	3.00			
	03	0715 U	0735 U	S11	E64	4949	20	1		0718					
{UCCLE GOOD HOPE NEDERHURST	03	0914 E	0916 U	S12	E09	4944	2 U	1	1						S-SWF
	03	0930 E	0933 U	S08	E60	4949	11	11							
	04	1132 E		N10	W85	4938	16	16	4						
	05	1049 U	1127 U	N26	E28	4951	38	26	4	1108	7.50	9.20			
	05	1049 U	1135 U	N26	E27	4951	46	1	4	1102	2.60	3.30			
SYDNEY SYDNEY SYDNEY SYDNEY ABASTUMANI	05	1120 U	1125 U	N26	E24	4951	5	26	2						S-SWF
	06	0010 U	0018 U	N15	E58	4953	8	1	2	0015	1.00	2.50			
	06	0134 U	0142 U	N18	E57	4953	8	1	2	0137	2.00	4.50			
	06	0157 U	0204 U	N17	E56	4953	7	2	2	0158	3.50	7.00			
	06	0443 U	0501 U	N15	E56	4953	18	1	2	0446	2.00	5.00			
VOROSHILOV GOOD HOPE GOOD HOPE CLINAX	06	0638 E	0723 U	N22	W89	4936	45 U	2-	1	0703		16.14			S-SWF
	07	0215 U	0404 U	S16	W11	4947	109 U	26	3	0237		15.90		91	
	07	0639 E	0725 U	N07	W90	4954	46 U	2		0652	1.30				
	07	0847 U	0915 U	N07	W90	4954	28	1		0853	.40				
	07	1851 U	2035 U	N23	W03	4951	104	1		1935	4.60				
VOROSHILOV VOROSHILOV ABASTUMANI UCCLE	09	0047 U	0109 U	S04	E13	4955	22	1	2	0053		2.47		66	S-SWF
	09	0240 U	0247 U	N17	W71	4943	7	16	1	0241		2.13		128	
	10	0812 E	0856 U	N19	W41	4951	44 U	2-	2	0830		15.70	1.40	78	
	10	1100 E		S12	W09	4952	16	16	2						
	11	0234 U	0239 U	N21	E60	4962	5	1	2	0236	1.00	2.00			
SYDNEY KODAIKNL UCCLE SYDNEY {SYDNEY NIZAMIAH SYDNEY	11	0311 E		S16	W63	4947	1	1	2						S-SWF
	11	1100 U	1105 U	N20	E62	4955	5 U	1	3						
	11	2300 E	2309 U	N21	E51	4962	9 U	1	2	2300	1.00	2.00			
	12	0252 U	0321 U	N18	W69	4951	29	1	2	0300	1.50	4.00			
	12	0259 E	0309 U	N27	W60	4951	10 U	1	3	0259	1.82	4.20	1.50		
VOROSHILOV	12	0412 U	0455 U	N26	E48	4962	43	1	2	0426	2.00	3.00			S-SWF
	13	0238 U	0241 U	N20	W80	4951	3	16	1	0239		2.18		80	



# SOLAR FLARES

JANUARY 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME			LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS					PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.	MC-MATH FLARE REGION				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	MAX. INT. %	
ABASTUMANI ABASTUMANI { SYDNEY VORUSHILOV { GOOD HOPE UCCLE { UCCLE	13 13 14 14 14 14 14	0558 E 0616 0225 0239 1053 1057 1107 E	0616 D 0629 D 0456 0417 D 1124 1107 D 1107 E	0604 0619 U 0321 0311 1103 1059 1059	N17 N23 S21 S26 N29 N29 N27	W70 E34 W45 W41 W08 W10 W10	4951 4962 4958 4958 4959 4959 4959	18 D 13 D 151 98 D 31 10 D 1	1 1 2 2 1 16 1	2 2 2 1 2 1 1	0604 0619 0321 0311 1103 1059 1059	7.00 10.00 16.40 2.40 6.00 6.00 6.00	3.50 1.70 10.00 16.40 2.40 6.00 6.00	66		
	15 15 15 15 15 16 16 16 17 17 17 17 17 17 18 18 18 19 19 19 19 20 2															

COMMERCE - STANDARDS - BOULDER

# SOLAR FLARES

JANUARY 1959

OBSERVATORY	DATE	OBSERVED		LOCATION		DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	MER. DIST.				M-MATH REGION	TIME — UT	MEAS AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH H <sub>s</sub>
GOOD HOPE CAPRI-G CAPRI-G CAPRI-G {GOOD HOPE CAPRI-G CAPRI-G CAPRI-G CAPRI-G CAPRI-G	21	0806	0900	S11	E50	4977	1		0825	3.00	4.70			
	21	1246	1250	N13	E07	4969	1		1247		2.00			
	21	1246	1301	N15	E51	4976	1		1247		3.00			
	21	1249	1301	N17	E05	4969	1		1250		2.00			
	21	1246	1334	S15	E28	4972	2		1334	5.00	5.80			
	21	1249	1412	S10	E25	4972	2		1320		6.00			
	21	1327	1332	N13	E19	4973	1		1330		3.00			
	21	1445	1458	N18	E05	4974	1		1450		3.00			
	21	1537	1547	N10	E11	4973	1		1538		3.00			
	22	0706	0715	N11	E10	4973	1		0709	3.00	3.20			
{SIMELZ ABASTUMANI {ABASTUMANI {SIMELZ ABASTUMANI {SIMELZ GOOD HOPE KIEV {NIZAMIAH KIEV {GOOD HOPE NIZAMIAH KHARKOV KHARKOV {KHARKOV GOOD HOPE KIEV* KIEV CAPRI-G CAPRI-G	22	0739	0750	N12	*11	4969	1		0742		2.00		100	
	22	0739	0752	N12	*11	4969	1		0750		2.70	2.50		
	22	0805	0827	N19	*17	4969	2		0811		7.50	1.20	76	
	22	0805	0840	N19	*18	4969	3		0808		3.70		68	
	22	0832	0918	N14	E37	4976	4		0907		12.00	1.50	82	
	22	0854	0946	N14	E40	4976	5		0855		5.60	3.20	112	
	22	0856	0937	N16	E38	4976	4		0902	2.90	3.90			
	22	0856	0938	N18	E41	4976	4		0900		5.50		74	
	22	0904	0908	N10	E38	4976	4		0904	3.65	4.84	1.70		
	22	1011	1026	N12	*04	4973	15		1012		3.90		65	
{GOOD HOPE NIZAMIAH KHARKOV KHARKOV KHARKOV GOOD HOPE KIEV* KIEV CAPRI-G CAPRI-G	22	1011	1032	N09	*01	4973	2		1012	2.10	2.20			
	22	1012	1019	N07	E02	4973	7		1012	2.43	2.48	1.70		
	22	1012	1050	N09	*05	4973	18		1015		3.40	2.70		
	22	1102	1126	N10	*16	4969	24		1110		5.70	1.50		
	22	1108	1145	N08	*04	4973	37		1125		33.10	4.00		
	22	1108	1147	N10	*03	4973	39		1125	5.40	5.60			
	22	1109	1158	N10	E13	4973	29		1125		3.50			
	22	1109	1144	N10	*02	4973	35		1127		9.00		138	
	22	1515	1542	N10	*14	4969	27		1127		6.00			
	22	1546	1552	N09	*01	4973	6		1127		5.00			
NIZAMIAH GOOD HOPE ABASTUMANI UCCLE {UCCLE GOOD HOPE UCCLE CAPRI-G	23	0322	0335	N15	E32	4976	11		0327	2.43	3.09	1.60		
	23	0713	0810	N20	*26	4969	57		0718	2.20	2.70			
	23	0828	0858	N16	*20	4969	30		0844		7.70	1.80	66	
	23	0944	1040	N18	*02	4974	56							
	23	1025	1055	N13	*34	4969	30							
	23	1027	1053	N11	*30	4969	26		1032	2.30	2.90			
	23	1116	1130	N16	E30	4976	14		1119	1.50	4.00			
	23	1530	1532	N09	*04	4973	2							
	24	1114	1215	N12	*16	4973	61		1124		5.00			
	24	1121	1215	N10	*20	4973	54		1126	1.90	2.10			
{GOOD HOPE UCCLE CAPRI-G CAPRI-G CAPRI-G CAPRI-G CAPRI-G SYDNEY SYDNEY VOROSHILOV KUDAIKNL	24	1123	1155	N13	*19	4973	2							
	24	1138	1247	N21	*22	4974	17		1141		3.00			
	24	1240	1247	N11	*23	4973	7		1243		2.00			
	24	1315	1420	N13	*16	4973	65		1316		3.00			
	24	1430	1432	N20	*15	4974	2		1432		3.00			
	25	0030	0038	S08	E17	4977	8		0030	2.00	2.00			
	25	0203	0315	N17	*42	4969	72		0216	7.00	11.00			
	25	0211	0253	N14	*46	4969	42		0220		5.33			
	25	0217	0223	N17	*43	4969	5		0217	5.45	8.18	1.40	127	S-SWT
	25	0217	0220				2							

# SOLAR FLARES

JANUARY 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME			LOCATION		DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	M- MATH PLAGE REGION				TIME — UT	MEAS AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>g</sub>	
NIZAMIAH ABASTOMANI KIEV* CAPRI-G GOOD HOPE UCCLE GOOD HOPE UCCLE	25	0523 E	0531 D		N19 W41	4969	8 D	1	2	0523	1.82	2.68	1.50	Slow S-SWF
	25	0730 E	0833 D	0747 U	N19 W04	4976	33 D	2	2	0747		20.10		
	25	1042 E	1052 D	1046 U	N16 W51	4969	10 D	1	2	1046		1.80		
	25	1125 E	1132 D		N11 W29	4973	7 D	1	1			2.00		
	25	1249 E	1305 D	1250	N22 E31	4979	16 D	1		1250	2.60	3.50		
	25	1330 E	1418 D	1355	N11 W35	4973	48	16	4	1355	3.50			
	25	1333 E	1406 D		N09 W34	4973	33	1	4	1350	3.30	4.10		
	25	1407 E	1417 D	1417	N18 W55	4969	33	2	4	1417	5.00	8.00		
	25	1423 E	1434 D	1434	N14 W35	4973		2	4	1434	5.00	6.00		
	26	0013 E	0110 D	0037	N09 W42	4973	57 D	2	2	0037	4.00	5.00		
SYDNEY	26	0112 E	0125 D	0116	N17 W45	4974	13	1	2	0116	2.00	3.00		
SYDNEY	26	0216 E	0244 D	0230	N16 W54	4969	28	1	2	0230	2.00	4.00		
SYDNEY	26	0227 E	0239 D	0232	N20 E76	4983	12	1	2	0232	.75	2.00		
SYDNEY	26	0244 E	0254 D		N08 W51	4973	10	1	1	0252	1.50	2.00		
NIZAMIAH	26	0444 E	0450 D		N18 W58	4969	6 D	1	2	0444	1.52	3.28	1.70	
GOOD HOPE	26	0647 E	0735 D		N21 W40	4974	48 D	2		0647	4.00	5.90		
GOOD HOPE	26	0647 E	0752 D		N11 W45	4973	65 D	2		0647	5.00	7.20		
GOOD HOPE	26	0650 E	0705 D	0652	N09 W56	4969	15	1		0652	1.50	2.70		
GOOD HOPE	26	0705 E	0710 D	0707	N22 W63	4969	5 D	1		0707	1.00	2.40		
GOOD HOPE	26	0842 E	1000 D	0903	N17 W67	4969	78	3	2	0903	5.00	12.80		
NIZAMIAH	26	0844 E	0917 D	0857	N16 W63	4969	33	26	2	0857	6.08	13.12	3.40	
CAPRI-G	26	0845 E	1030 D		N17 W60	4969	105 D	2	2	0900		6.00		
KODAIKNL	26	0855 E	0906 D	0902	N17 W57	4969	11 D	2	2	0855		5.00	2.00	
CAPRI-G	26	0930 E	1030 D		N12 W08	4976	60 D	1	2	0935		4.00		
CAPRI-G	26	0951 E	1030 D	0955	N11 W42	4973	39 D	1	2	0955		4.00		
GOOD HOPE	26	0952 E	1002 D	0954	N11 W44	4973	10	1		0954	1.80	2.50		
GOOD HOPE	26	1027 E	1315 D	1050	N15 W60	4969	168	3		1050	6.50	14.30		
CAPRI-G	26	1044 E	1215 D		N18 W60	4969	91 D	2	2	1100		8.00		
NIZAMIAH	26	1052 E	1058 D		N15 W60	4969	6 D	16	2	1052	3.65	7.87	1.90	
UCCLE	26	1057 E	1152 D		N14 W60	4969	55 D	3	4	1100	11.00	20.00		
CAPRI-G	26	1500 E	1550 D		N22 E62	4983	50 D	1	1	1502		4.00		
KODAIKNL	27	0210 E	0235 D	0230	N13 W75	4969	25 D	1	2	0210	1.36	5.15	1.60	
NIZAMIAH	27	0412 E	0419 D		N18 W20	4976	7 D	1	2	0412	3.04	3.31	1.50	
SIMEIZ	27	0910 E	0925 D	0912	N04 E36	4982	15 D	1	1	0912		1.20	2.00	
UCCLE	27	0930 E	0950 D	0938	N09 W21	4976	20 D	2	4	0938	6.00			
GOOD HOPE	27	0930 E	1035 D	0937	N10 W22	4976	65	1		0937	2.90	3.20		
SIMEIZ	27	0931 E	0938 D	0938 U	N09 W26	4976		16	1	0937		5.20	2.80	
UCCLE	27	1000 E	1009 D	1006	N04 E36	4982	9	1	4	1006	1.50			
UCCLE	27	1125 E	1138 D		N07 W60	4973	13	1	4		2.50	5.00		
GOOD HOPE	27	1129 E	1142 D	1135	N15 W61	4969	13	1		1135	1.00	2.10		
GOOD HOPE	27	1213 E	1255 D	1215	N19 E50	4983	42	1		1215	1.40	5.00		
CAPRI-G	27	1220 E	1227 D		N20 E47	4974	7 D	1	1	1221				
NEDERHORST	27	1320 E	1330 D		N11 W21	4976	10 D	1	3			3.00		
CAPRI-G	27	1323 E	1327 D		N15 W23	4976	4 D	1	1	1325				
NEDERHORST	27	1330 E	1400 D		N06 E43	4982	30 D	2	3	1333	2.40	3.30		
GOOD HOPE	27	1331 E	1333 D		N06 E43	4982	2 D	1			5.00			
UCCLE	27	1348 E	1430 D		N05 E43	4982	42 D	2	4					
CAPRI-G	27	1340 E	1347 D		N06 W60	4973	7 D	1	1	1341	1.30	5.00		
UCCLE	27	1408 E	1420 D		N05 E35	4982	12	1	4		8.00	11.00		
UCCLE	27	1420 E	1430 D	1430	N10 W68	4973		26	4	1430				
NEDERHORST	27	1438 E	1443 D		N10 W60	4973	5	2	3					

# SOLAR FLARES

JANUARY 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. MER. DIST.				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>o</sub>	MAX. INT. %
CAPRI-G	27	1452 E	1457 D	N06	E41	4982	5 D	1	1453		4.00		
VOROSHILOV	28	0059	0108	N10	W70	4973	9	3	0105		2.18		
SYDNEY	28	0412	0420	N13	W69	4969	8	1	0416	•75	2.00		98
ABASTUMANI	28	0716 E	0809 D	N08	W74	4973	53 D	3	0745		7.00		
CAPRI-G	28	1046 E	1047 D	□			1 D	1					
UCCLE	28	1110	1120	N04	E23	4982	10	4		1.50	4.00		
CAPRI-G	28	1120 E	1132 D	N22	E37	4983	12 D	1	1130				
CAPRI-G	28	1240 E	1246 D	□			6 D	1					
CAPRI-G	28	1455 E	1502 D	N05	E24	4982	7 D	1	1457		3.00		
CAPRI-G	28	1532 E	1537 D	N15	W35	4976	5 D	1	1534		5.00		
NIZAMIAH	29	0457 E	0503 D	N12	W45	4976	6 D	16		3.04	4.55	2.00	
ALMA-ATA	29	0525	0550	N14	W49	4976	25 D	2	0457		3.30		71
{ UCCEL	29	0934	0955	N21	E90	4992	21	1	0525				
CAPRI-G	29	0948 E	0956	N26	E76	4992	8 D	1	0950		4.00		
NEDERHOFST	29	0949 E	0955 D	N08	W87	4973	6 D	1					
CAPRI-G	29	0957 E	1030 D	S07	W48	4977	33 D	1	1000		3.00		
UCCEL	29	1112	1145 D	N08	E90	4992	33 D	16					
CAPRI-G	29	1445 E	1502 D	N05	E17	4982	17 D	2	1447		6.00		
CAPRI-G	30	0902 E	0920 D	N05	E03	4982	18 D	1	0904		4.00		
CAPRI-G	30	1322 E	1402 D	N24	E59	4992	40 D	1	1328		5.00		92
VOROSHILOV	30	2341	0006	N13	E90	4997	25	3	2350				
{ SYDNEY	31	0110	0139	N18	E03	4983	29	2	0117	5.00	6.00		
VOROSHILOV	31	0111	0137	N21	W01	4983	26	16	0111		2.60		93
CAPRI-G	31	0825 E	0847	S08	W44	4987	22 D	1	0827		4.00		
GOOD HOPE	31	0842	0945	N21	W78	4976	63	2	0913	1.80	8.80		
{ GOOD HOPE	31	1009	1028 D	N11	E57	4992	19 D	16	1013	3.20	6.00		
CAPRI-G	31	1020 E	1032 D	N12	E51	4992	12 D	1	1021		3.00		
CAPRI-G	31	1108 E	1112 D	N18	E54	4992	4 D	1	1110		3.00		
CAPRI-G	31	1347 E	1416	N20	E59	4992	29 D	1	1349		3.00		
CAPRI-G	31	1440 E	1522 D	N14	W18	4982	42 D	1	1442	2.20	7.00		
GOOD HOPE	31	1442	1510	N22	W04	4983	28	1	1450		2.50		

COMMERCE - STANDARDS - BOLDER

These flare reports are addenda to the January 1959.  
flares published in CRPL-F 174 Part B, February 1959.

CAPRI G ANACAPRI - GERMAN  
CAPRI S ANACAPRI - SWEDISH  
GOOD HOPE ROYAL OBSERVATORY, CAPE OF GOOD HOPE  
KIEV\* KIEV UNIVERSITY  
KODAIKANAL KODAIKANAL  
KRASNAYA KRASNAYA PAKHRA  
MOSCOW NITZMIR

MOSCOW-G  
R O EDIN  
R O HERST  
SAC PEAK  
SCHAUNS  
USNRL

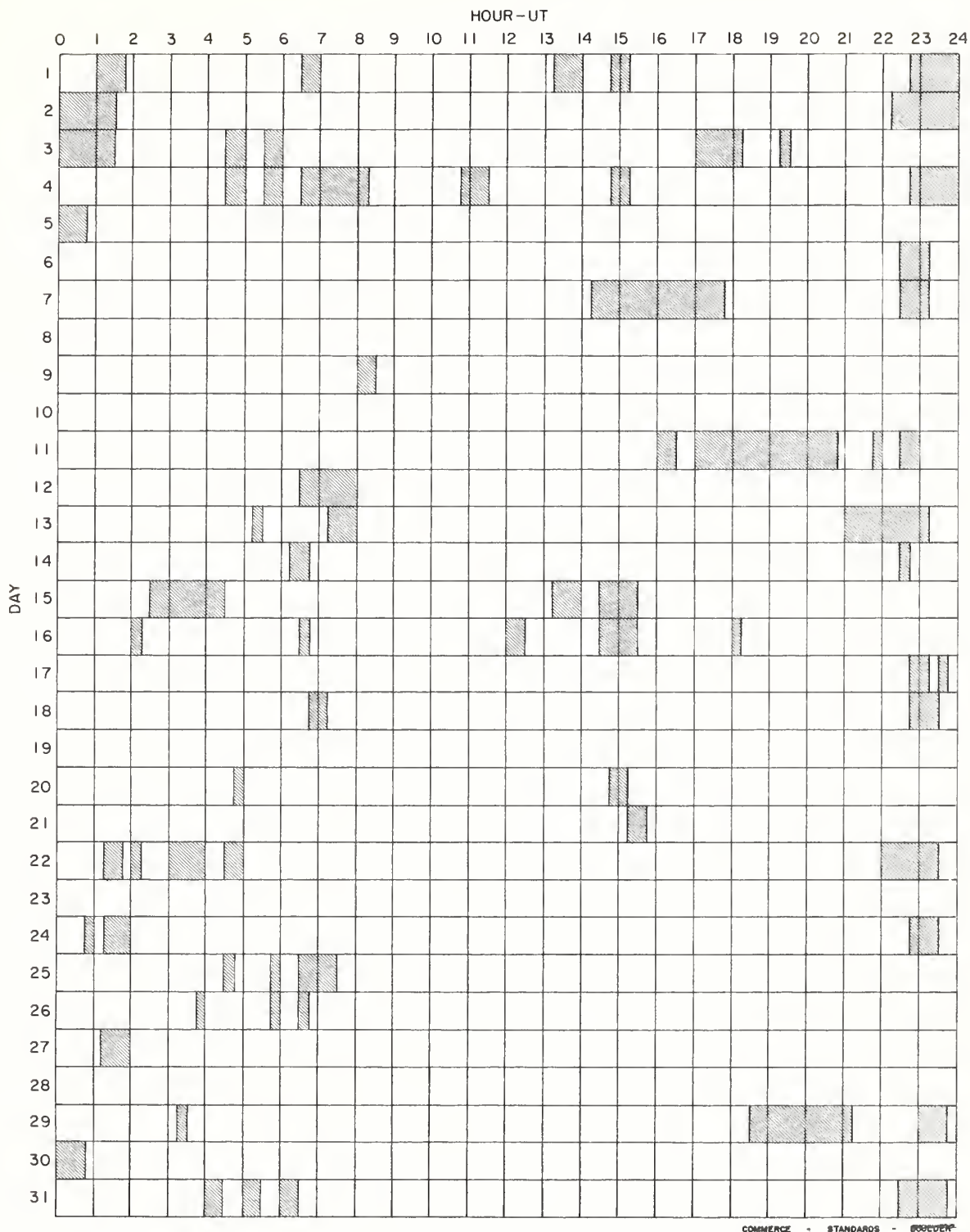
MOSCOW - GALSH  
ROYAL OBSERVATORY, EDINBURGH  
GREENWICH ROYAL OBSERVATORY, HERSTMONCEUX  
SACRAMENTO PEAK  
SCHAUNSLAND  
UNITED STATES NAVAL RESEARCH LABORATORY

SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE  
ARBITRARY UNITS (0-40), NOT PERCENT  
OF CONTINUOUS SPECTRUM.

E - LESS THAN & - PLUS  
D - GREATER THAN - - MINUS  
U - APPROXIMATE □ - NOT REPORTED

# INTERVALS OF NO FLARE PATROL OBSERVATIONS JANUARY 1959

IIIc



## Stations Include:

Abastumani  
Alma Ata  
Anacapri (Swedish)  
Arcetri  
Capetown  
Climax 1-9  
Dunsink  
Hawaii

Huancayo  
Kharkov  
Kiev GAO  
Kiev University  
Kodaikanal  
Krasnaya Pakhra  
Meudon  
Mitaka

Moscow University  
Nederhorst  
Nizamiyah  
Ondrejov  
Royal Greenwich Observatory  
Herstmonceux  
Sacramento Peak  
Simeiz

Sydney  
Tashkent  
Uccle  
U.S. Naval Research  
Laboratory  
Utrecht  
Voroshilov



SOLAR FLARES

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	MAX. PHASE	APPROX. LAT.				MATH. MER. DIST.	PLAGE REGION	TIME — UT	MEAS. AREA Sq. Deg.		CORR. AREA Sq. Deg.
SYDNEY	OCT 1958													
	06	2310	2326 D	2323	N19 E38	4805	16 D	1		3.00	4.00			
GOOD HOPE	24	0853	0915	0856	S32 E40			1-	0856	.90	1.50			
GOOD HOPE	24	0922	1000	0936	S02 W58	4826	38	1	0936	1.50	2.80			
GOOD HOPE	24	1035	1100	1039	S04 W55	4826	25	1	1039	1.60	2.90			
GOOD HOPE	24	1131	1155	1135	S32 E37			1-	1135	1.30	2.00			
GOOD HOPE	24	1222	1259	1230	S10 W31			1-	1230	1.20	1.50			
GOOD HOPE	24	1327	1347	1331	S10 W31	4929	20	1	1331	1.70	2.10			
GOOD HOPE	25	0715	0741	0731	S11 W39			1-	0731	1.10	1.50			
GOOD HOPE	25	0750	0815	0756	S09 W42	4929	25	1	0756	1.80	2.50			
GOOD HOPE	25	0834	0850	0836	N23 W88	4818	16	1	0836	.20	5.70			
GOOD HOPE	25	0855	0910	0902	S11 W41			1-	0902	1.20	1.60			
GOOD HOPE	25	1034	1058	1039	S06 W07			1-	1039	1.10	1.10			
GOOD HOPE	25	1053	1110	1057	S11 W43			1-	1057	.90	1.30			
GOOD HOPE	25	1238	1320	1250	N23 W88	4818	42	1	1250	.30	8.60			
GOOD HOPE	27	0645 E	0702		S16 E46			1-	0645	1.00	1.60			
GOOD HOPE	27	0645 E	0758		S09 W71	4829	73 D	1	0647	1.10	4.20			
GOOD HOPE	27	0723 E	0750 D		S09 W76	4829	27 D	1	0724	1.30	5.80			
GOOD HOPE	27	0822 E	0825 D		S14 E43			1-	0825	1.00	1.50			
GOOD HOPE	28	1146	1156	1151	S09 W90			1-	1151	.20				
GOOD HOPE	31	1019 E	1200		S19 E39	4849	101 D	2	1019	8.00	10.90			
GOOD HOPE	31	1258	1330	1312	S17 E40			1-	1312	1.30	1.80			
GOOD HOPE	31	1152 E	1250		N07 W85	4841	58 D	1	1237	.70	8.10			
GOOD HOPE	31	1343	1355	1346	N07 W85			1-	1346	.60	6.90			
														S-SWF

These flare reports are addenda to the October 1958  
flares published in CRPL-F 171 B, November 1958 and  
CRPL-F 174 B, February 1959.

E = LESS THAN      & = PLUS  
D = GREATER THAN    - = MINUS  
U = APPROXIMATE    □ = NOT REPORTED

Two solar flares reported by R. O. Herstmonceux and published in CRPL-F 164B and CRPL-F 168B respectively should have positions corrected to read as below													
R.O.Herst	Mar. 14	1504E	1530	1507	S20 W90	4445	26 D	1	2	1507	.50	2.80	12.0
R.O.Herst	July 3	0752	0835	0802	N24 W15	4628	43	1+	3	0804	2.50		

Note: We invite notification of similar corrections to the published data.

# INTERVALS OF NO FLARE PATROL OBSERVATIONS

The following are changes to the Intervals of No Flare Patrol Observations charts due to the inclusion, in CRPL-F 174 B of February 1959, of the data from Mt. Wilson for the period July 1957 through April 1958. The times listed are times originally indicated as 'no flare patrol' but during which Mt. Wilson was patrolling.

July 1957	4	2300-2330	Aug.	21	0000-0030	Dec.	21	2230-2245
	6	0000-0130		24	0000-0100		23	2215-2245
	7	0100-0230		25	1700-1730		24	1715-1930
	8	1630-1830		26	0000-0045			2000-2045
	9	0130-0230		29	0000-0200		28	2215-2230
	10	0000-0030	Sept.		2100-2130	Jan. 1958		2245-2300
	11	0030-0215		30	0030-0100		29	0000-0015
		2030-2300		31	1600-2115			2315-2330
	12	2100-2130			2145-2400		1	2300-2330
	13	0130-0200		1	0000-0045		2	2245-2300
		1700-1730		2	0030-0115		5	1730-1745
	14	0030-0045		3	0015-0030			2300-2330
		1730-2330		4	1800-1830		12	2300-2315
	16	0200-0230		6	1700-1800		13	1700-1730
	17	1700-1830		10	2200-2230		16	2100-2115
		2000-2030		12	0100-0130		18	1630-1745
	18	2100-2200		21	0000-0030			1800-1815
	19	2300-2400	Oct.	27	0030-0115			1830-2045
	20	0000-0200		28	0030-0115			2115-2145
		1730-1800		29	0030-0045		19	1745-1800
	21	0200-0215		1	0000-0030			1900-1915
	23	0200-0230		6	1730-1800		22	2045-2100
		1700-1900		12	1600-1630			2215-2315
	26	0100-0130		16	2000-2115		23	2100-2200
		0200-0230		17	1615-1630		27	2015-2030
	27	2100-2130			1700-1730			2115-2300
		2200-2230			1830-1930			2315-2330
Aug.	30	0100-0230			2000-2200		28	1630-1700
		1830-2300			2245-2300			2330-2400
	31	0030-0100		18	1615-1715		29	2245-2400
	1	0000-0030			1730-1745		30	0000-0030
	3	0100-0130		19	1600-1630			2115-2145
		2300-2330			1700-2130			2215-2400
	4	0130-0200			2145-2215	Feb.	13	2115-2215
		1800-1830			2230-2400		17	2300-2400
		1845-1900		20	0000-0015		20	2100-2145
		2100-2130		24	2230-2300		22	1615-1645
	5	2000-2030		25	2130-2215			1715-1745
	6	1930-2030			2230-2345		23	2315-2345
		2100-2330		27	1900-1930		24	0000-0115
	7	0100-0130			2230-2245			2115-2245
		2130-2330	Nov.	7	2230-2245		26	2300-2315
		2345-2400		9	2315-2330		27	2300-2330
	8	0000-0030		10	1915-1930	Mar.	1	1630-1700
		0100-0130			1945-2000			1900-1945
		1800-1830			2215-2400		4	2130-2200
	9	0000-0100		16	1645-1700			2215-2345
	10	1700-1730		18	2300-2330		5	2215-2230
		1900-1930		19	1615-1715		18	1800-1900
	12	1730-1800		23	2215-2330		19	1945-2000
	13	0030-0100		29	2315-2330		20	2015-2030
	16	1930-2330			2345-2400	Apr.	16	0115-0130
		2345-2400		30	0000-0030		17	2200-2300
	17	1500-1530	Dec.		2300-2315		20	2345-2400
		1700-1900		6	2100-2400		21	0000-0130
		2200-2400		7	1700-1730		22	2100-2115
	18	1700-1830			1815-1900			2145-2200
	19	1900-1930		8	2230-2330		23	0030-0045
		2100-2230		9	2230-2245		24	2100-2145
	20	2315-2400		11	2215-2300			2230-2245

# IONOSPHERIC EFFECTS OF SOLAR FLARES

(SHORT-WAVE RADIO FADEOUTS)

FEBRUARY 1959

Feb. 1959	Start UT	End UT	Type	Wide Spread Index	Importance	Observation Stations	Known Flare, UT CRPL-F 175B
1	0422	0450	S-SWF	5	3-	NE, OK, <u>TO</u> , CW+	0425E
1	1718	1736	Slow S-SWF	5	1+	BE, FM, HU, MC, <u>PR</u> , WS	1714
2	1717	1730	G-SWF	3	1+	HU, <u>MC</u> , PR	1702
2	1817	1942	S-SWF	5	3	AN, <u>BE</u> , FM, HU, LA, MC, NE, PR, WS, CW*	1815
3	0038	0100	Slow S-SWF	5	1+	AD, <u>NE</u> , <u>OK</u>	
8	0925	1005	S-SWF	1	1	<u>NE</u>	
8	1342	1411	S-SWF	5	2	BE, <u>DA</u> , HU, MC, NE, PR, PU	1342E
8	2038	2112	S-SWF	5	2	AD, BE, FM, HU, LA, MC, PR, <u>WS</u>	*
9	0200	0245	S-SWF	5	3	AD, AN, <u>CA</u> , HO, TO	*
9	0952	1044	S-SWF	4	3	<u>NE</u> , SW, <u>CW***</u>	0945
9	1300	1434	G-SWF	5	2-	JU, NE, <u>PR</u>	1103
9	1620	1630	S-SWF	3	1	<u>BE</u> , MC, <u>PR</u>	*
9	1632	1720	S-SWF	5	2+	<u>BE</u> , FM, HU, LA, MC, NE, PR, WS, SW, <u>CW***</u>	*
10	0217	0258	Slow S-SWF	5	2	AD, <u>OK</u> , TO	0216
10	0350	0410	S-SWF	5	1+	NE, <u>OK</u>	0346
10	1823	1835	S-SWF	5	1	BE, FM, HU, LA, MC, <u>PR</u> , WS	
12	2308	2348	Slow S-SWF	5	2	AD, AN, HU, LA, <u>TO</u> , <u>WS</u>	2300E
15	0440	0500	S-SWF	1	1+	<u>OK</u>	*
15	1628	1644	S-SWF	5	1+	BE, HU, MC, NE, <u>PR</u> , WS	
16	0523	0539	S-SWF	1	1	<u>OK</u>	*
16	2042	2120	Slow S-SWF	5	1+	AD, AN, BE, HU, MC, PR, <u>WS</u>	
17	1834	1900	Slow S-SWF	5	1	AD, AN, <u>MC</u> , PR, WS	*
18	0100	0120	S-SWF	4	1	AD, <u>OK</u>	*
18	0500	0525	S-SWF	5	2+	<u>CA</u> , <u>OK</u> , TO	*
19	2030	2110	Slow S-SWF	5	1+	AD, AN, <u>BE</u> , HU, MC, PR, WS	2029
27	1757	1915	Slow S-SWF	4	2+	BE, FM, <u>MC</u> , WS	1818

\*No known flare patrol

CA = Canberra, Australia

DA = Darmstadt, G.D.R.

HO = Hollandia, New Guinea

PU = Prague, Czechoslovakia

SW = Enkoping, Sweden

TO = Hiraoso Radio Wave Observatory, Japan

CW\* = Cable and Wireless, Barbadoes

CW\*\* = Cable and Wireless Somerton, England

CW\*\*\* = Cable and Wireless, Brentwood, England



## IONOSPHERIC EFFECTS OF SOLAR FLARES

( Sudden Cosmic Noise Absorption  
Sudden Enhancements Of Atmospherics )  
Solar Noise Bursts At 18 Mc.

AUGUST 1958

DATE	CLASS			WIDESPREAD INDEX	TIME (UNIVERSAL TIME)			PERCENT ABSORPTION SCNA	OBSERVATION STATIONS
	SCNA	SEA	Burst		BEGIN	MAX.	END		
1		1-		4	1150		1220		DU, KU, NU
1			1	5	1636	1637	1638		MC, RE, SP
1			1	4	2148	2149	2155		BO, RE
2		1-		3	0741		0756		KU, NU,
2		1-		1	1254		1300		NU
2			1-	4	1837		1838		BO, RE
2			1-	4	1841		1842		BO, RE
2	2			5	1842	1902	2100U	57	BO, MC, RE
2		2+		5	1843	1849	1938		A1, A2, A3, A5, BO, ED, KU, MC, PA
2			1-	5	1847	1848	1849		BO, MC, RE
2			1	4	1924	1925	1943		BO, MC
3		1-		1	0841		0901		KU
3			1-	4	2022	2023	2025		BO, MC
3			1-	4	2027	2029	2030		BO, MC
3	1-			1	2145	2151	2221	9	BO
3		2		5	2148	2200	2230		A1, A2, A3, BO
4			2	4	1501	1505	1507		MC, RE
4			1	4	2113	2114	2117		BO, MC
5			1-	3	1830	1831	1831		BO, SP
5			1-	3	1952	1953	1954		BO, SP
6		3		1	0600		0708		HO
6		1-		3	1154		1214		KU, NU
6	1-			1	1516	1529	1600	9	BO
6			1	5	1522	1532	1610		A2, BO, KU
7		1		1	0047		0102		HO
7	2			5	1501	1508	1530	60	BO, ED, MC, RE, SP
7		2		5	1501	1512	1550		A1, A3, BO, DU, ED, KU, NE, NU, PA, SP
8			1+	5	1629	1631	1633		BO, MC, RE, SP
8			1+	5	1633	1636	1637		BO, MC, RE, SP
8			1	5	1910	1912	1913		BO, MC, SP
8			1	5	1932	1933	1935		BO, MC, SP
8			1-	5	2104	2106	2107		BO, MC, SP
9		1		1	0349		0419		HO
9			1	3	1600	1602	1609		MC, RE
9	1-			1	1607	1612	1620	5	BO
9		1-		1	1610	1614	1620		BO
9			1	5	1618	1622	1625		BO, MC, RE
9			1+	5	1652	1655	1656		BO, MC, RE, SP
9			2	5	1739	1744	1753		BO, MC, SP
9			1	5	1850	1852	1857		BO, MC, RE, SP
9			1	4	1938	1940	1941		MC, SP
10			1	5	1435	1439	1443		BO, MC, RE
10	1-	1-		3	1437	1451	1510		A4, BO
10				1	1439	1445	1505		BO
10			1	3	1536	1539	1550		MC, RE
10			1	5	1653	1655	1656		MC, RE, SP
10			1+	5	1658	1700	1702		BO, MC, RE, SP
10	1-	1-		1	1802	1811	1819		BO,
10				1	1805	1809	1820		BO
10			1	5	1826	1829	1837		BO, MC, SP
10			1	5	2024	2025	2026		MC, RE, SP
10			1	5	2036	2044	2045		MC, RE, SP
10			1	5	2145	2147	2149		BO, MC, SP
11	1			3	1457	1507	1530U	30	BO, RE
11		1-		5	1500	1507	1535		A2, BO, ED, KU, PA, NU
11			1	5	1817	1820	1822		BO, MC, SP
11			1	5	1954	1956	1958		BO, MC, SP
12		1		1	0423		0457		HO
12			1	3	1228	1233	1255		A1, A3
12			1	4	1652	1655	1656		BO, MC
12			1	4	1842	1849	1903		BO, MC
13		2		4	0929	0948	1047		BU, ED, NE
13	1			3	1206	1217	1240	35	MC, RE
13		1+		5	1207	1219	1333		BU, ED, KU, MC, NE, NU, PA
13			1-	4	1510		1511		BO, RE
13	1			4	1534	1538	1550	15	BO, MC, RE
13		1		5	1535	1543	1556		A2, BO, DU, KU, NU, PA
13			1	3	1712	1714	1715		BO, SP
13			1+	5	1737	1739	1741		BO, MC, SP
14		2+		3	0610		0637		NE, NU
14		1		1	0708		0730		HO

## IONOSPHERIC EFFECTS OF SOLAR FLARES

( Sudden Cosmic Noise Absorption  
Sudden Enhancements Of Atmospherics  
Solar Noise Bursts At 18 Mc. )

AUGUST 1958

DATE	CLASS			WIDESPREAD INDEX	TIME (UNIVERSAL TIME)			PERCENT ABSORPTION SCNA	OBSERVATION STATIONS
	SCNA	SEA	Burst		BEGIN	MAX.	END		
14			1	3	0802		0822		KU, NU
14	1			1	1240	1253	1310	20	RE
14		1+		4	1240		1315		ED, NE, PA
{ 14	1			4	1616	1630	1649	14	BO, MC, RE
14		2-		4	1618	1633	1651		A2, BO, NE
{ 14	1			4	1802	1817	1850	40	BO, RE, SP
14		1+		5	1803	1815	1837		A2, BO, ED, PA
{ 14			2+	5	2150	2210	2235D		A1, A2, A3, A6, BO
14	1+			4	2154	2202	2232	32	BO, RE, SP
14			1	3	2204	2205	2206		BO, SP
15		1-		1	0901		0931		KU
15		1		4	1321		1354		NE, NU, KU
{ 15	1-			1	1918	1921	1934	10	BO
15		2		3	1920	1938	2000		A2, A3
16		1+		4	0435		0510		ED, HO, NE
16		1-		3	1207	1212	1249		ED, KU
16			2	5	1659	1701	1704		BO, MC, RE, SP
16			1+	5	1706	1708	1710		BO, MC, RE, SP
16			1+	4	1741	1743	1744		RE, SP
17		2		3	1300	1320	1340		A2, DE
18		1-		4	0806	0818	0855		ED, KU, NU
18		3		1	1147		1228		HO
18		1		5	2145	2150	2200		A1, A2, A3, A7
19		1		1	0700		0800		HO
19		-		1	0807	0816	0847		ED
19			2	5	2200	2204	2213		BO, MC, SP
{ 20	1			1	0043	0047	0110		BO
20		2+		1	0045	0050	0145		A7
{ 20			2	5	2030	2055	2130		A2, A3, A5, A6, BO
20	1+			1	2035	2055	2120		BO
21			2	5	1907	1909	1911		BO, MC, SP
21			1+	5	2037	2040	2041		BO, MC, RE, SP
21			1	4	2115	2117	2119		BO, SP
22		1-		1	1320		1340		KU
22		2		5	1428	1435	1437		MC, RE, SP
{ 22			1	5	1438	1440	1441		MC, RE, SP
22	2+			5	1442	1450	1530U	70	BO, MC, RE, SP
22		1-		1	1444	1453	1530		BO
22			2	5	1458	1503	1507		BO, MC, SP
23		1+		4	1017	1026	1054		ED, KU, NU
{ 23	1			4	1415	1421	1510		DU, KU, PA
23		1-		1	1424	1427	1434		RE
{ 23			2	5	1650	1656	1659		BO, MC, RE, SP
23	1-			1	1659	1703	1725U		RE
24		1		4	0649		0714		HO, KU
{ 24	1			1	1118	1136	1142	15	RE
24		2+		2	1120	1138	1240		A3, A5
24		1		2	1258	1303	1345D		A3, A5
24			1	4	1340	1342	1343		RE, SP
24		1+		3	1423	1440	1455		A1, A3, A5
24			2	5	1835	1838	1839		BO, MC, SP
24		1-		3	1930	1933	1935		BO, SP
{ 24	1			3	2015	2030	-		A1, A7
24		1+		5	2022	2024	2027		BO, MC, RE, SP
25		2		3	1540	1545	1610		A1, A2, A5
25			1	3	2020	2021	2023		BO, SP
25		1-		3	2046	2047	2048		BO, SP
{ 26			3	1	0020	0039	0110D		A7
26	1			1	0024	0029	0055		SP
26			1	5	1606	1609	1610		MC, RE, SP
26			1	5	1748	1750	1751		BO, MC, SP
26		2		4	1818	1823	1843D		A1, A5, A7
26			2	5	2039	2042	2045		BO, MC, SP
26		1+		4	2228	2230	2232		BO, SP
27			1	5	2006	2007	2009		BO, RE, SP
28		1-		3	1020		1035		KU, NU
28		-		1	1157		1400		ED
{ 28	1-			3	1803	1810	1825	4	BO, RE
28		1-		1	1807	1808	1817		BO
30		1-		1	1442		1455		NU
{ 30	1			3	1605	1611	1626	12	BO, RE
30		1		5	1606	1611	1645		BO, KU, NU

# SOLAR RADIO EMISSION DAILY DATA

MARCH 1959

Washington, D.C.

9530 Mc.

Day	Flux	Day	Flux	Day	Flux
1		11	248	21	
2	236	12	250	22	
3	221	13	260	23	288
4	230	14	256	24	274
5	240	15	272	25	254
6	234	16	278	26	260
7	242	17	298	27	264
8	238	18	309	28	
9	248	19	313	29	
10	254	20	294	30	276
				31	258

## OUTSTANDING OCCURRENCES

Mar. 1959	Type	Start UT	Duration Hrs.Mins	Maximum Time UT Peak Flux	Observing Period UT	Remarks
2	Simple 2	2058.0	9.3	2059.0	26	1220-2140
3						1215-2130
4						1215-2215
5	Complex	1525.9	12.5	1528.2	108	1235-2220
6						1530-2140
7	Complex Complex	1246.5 1730	12.0 25.0	1248.6 1745	11 43	1155-2135
8						1520-2230
9	Simple 2 Complex	1720.3 1812.2	2.7 0.8	1721.0 1812.8	27 10	1220-2140
10	Complex Simple 2 Simple 1 Simple 2	1303.5 1421.8 1637.6 1921.0	3.5 3.0 2.0 3.6	1305.1 1422.3 1638.7 1921.9	8 24 6 77	1230-2150
11	Simple 1 Complex Simple 2F Simple 2	1412.4 1801.0 1839.2 2019.5	2.3 34.0 0.3 2.0	1413.2 1820.4 1839.3 2020.5	7 108 23 32	1340-2145
12	Simple 2 Post Inc.	1654.2 1657.6	3.4 13.0	1655.6	26 12	1215-2140 Strong Winds
13						1215-2150 Strong Winds
14						1725-2045 Strong Winds
15						1150-1540 Strong Winds
16	Simple 2 Simple 3 Simple 2	1158.2 1625.3 1704.4	0.6 9.7 4.0	1158.5 1627.0 1705.2	11 10 49	1145-2145 Strong Winds Strong Winds
17	Simple 1 Simple 2	1446.6 1709.0	0.5 1.5	1447.0 1709.7	6 50	1215-2100 Strong Winds
18	Simple 2 Simple 2 Group (2) Simple 2 Simple 2 Complex Complex	1458.5 1536.9 1753.3 1753.3 1801.6 1838.9 2215.6	Indeter Indeter 10.6 3.6 2.3 4.3 11.0	1459.5 1539.8 1754.2 1802.5 1840.0 2216.9	47 18 45 69 20 136	1330-2235 Radar Interference
19	Group (2) Complex Simple 2 Simple 2 Simple 2	1428.0 1428.0 1444.5 1631.1 1951.0	22.8 9.5 6.3 2.8 3.6	1428.9 1446.2 1631.9 1952.2	41 53 59 16	1230-2130
20	Simple 1 Simple 3 Post Inc. A Complex	1256.0 1525 1600.0 1636.2	3.5 35.0 1 30 11.0	1257.8 1529.5 1642.3	5 40 24 20	1235-2150
23	Post Inc. Simple 3A Complex Simple 2 Simple 2 Simple 2 Simple 3A Simple 2 Simple 2 Simple 1 Simple 2 Simple 2 Simple 2 Simple 2 Simple 2 Simple 3A Simple 2 Complex	1215 1311.0 1328.4 1335.4 1339.2 1520.0 1530.6 1542.4 1550.2 1551.6 1606.5 1815.5 1820.9 1852.0 1855.3 1901.2	50.0 4 30 6.0 2.3 2.0 1 30 5.8 1.6 1.3 1.5 1.6 0.6 1.3 50.0 0.8 4.0	1343.3 1331.5 1336.4 1340.0 1556.4 1533.4 1542.9 1551.0 1552.3 1606.8 1815.8 1821.5 1916.6 1855.7 1902.5	36 77 95 8 20 12 21 7 9 17 12 10 23 45 16	1215-2145
24	Simple 2 Simple 3 Group 2 Simple 2 Simple 2 Simple 2 Simple 3	1723.2 1959.0 2054.3 2054.3 2059.7 2104.9	1.0 54.0 16.3 3.4 2.3 7.7	1723.6 2009.5 2055.9 2100 2107.0	11 10 30 11 12	1215-2200
25	Complex Complex	1721.6 2013.2	8.3 1 08	1723.6 2016.9	9 154	1400-2145
26	Simple 2 Simple 2 Simple 2	1247.5 1516.8 2101.0	5.6 3.6 Indeter	1249.1 1518.2 2103.2	19 79 31	1215-2110 Strong Interference
27						1130-2010 Rain All Day
30	Complex Simple 2	1547.9 2016.2	35.0 1.7	1550.2 2017.1	190 34	1215-2150 Interference Radar Interference

# SOLAR RADIO EMISSION DAILY DATA

FEBRUARY 1958

Washington, D.C.

9530 Mc.

Day	Flux	Day	Flux	Day	Flux
1	233	11	288	21	242
2		12	296	22	248
3	266	13	301	23	
4	296	14	284	24	264
5		15	278	25	252
6	303	16		26	254
7	299	17		27	250
8	301	18		28	258
9		19	258		
10	292	20			

## OUTSTANDING OCCURRENCES

Feb. 1958	Type		Start UT	Duration Hrs.Mins	Maximum		Observing Period UT	Remarks
	IAU				Time UT	Peak Flux		
1							1610-2050	
3	Complex Complex	CD	1541.0 Indeter	2.5 Indeter	1541.7 1727.4	22 14	1400-2130	
4							1400-2135	
6	Group (2) Complex Complex	CD	1803.4 1803.4 1804.9	4.0 0.8 0.9	1804.0 1805.0	34 39	1400-2145	
7							1345-2145	
8	Simple 3	SD	1738.0	2 15	Indeter	14	1330-2140	
10	Complex Post Inc.	CA	1904.0 1923.0	19 >2	1905.8	307 28	1345-2140	
11	Simple 2	SD	1344.0	6.0	1346.0	16	1340-2130	
12	Group (2) Simple 2 Simple 2 Complex	SA  CD	1840.3 1840.3 1845.2 2036.0	15  4.7 10.7 2.7	1843.3 1847.1 2037.5	55 51 13	1330-2130	
13							1330-2130	
14	Simple 2	SD	2041.9	2.8	2042.8	26	1400-2140	
15							1420-1830	
19							1415-2110	
21							1330-2140	
22							1320-1920	
24							1330-2130	
25	Simple 3	SD	2000.0	>1 30	2029.0	15	1330-2135	
26	Simple 1	SD	1503.0	2.0	1504.0	6	1400-2100	
27							1430-2130	
28	Simple 2 Complex	SD CD	1728.0 1838.8	7.0 12.2	1730.5 1843.5	11 16	1330-2140	

COMMENCE - STANDARDS - BORDEA

# SOLAR RADIO EMISSION DAILY DATA

Washington, D.C.

MARCH 1959

3200 Mc.

Day	Flux	Day	Flux	Day	Flux
1		11	165	21	
2	144	12	173	22	
3	140	13	183	23	221
4	145	14	188	24	203
5	150	15	209	25	207
6	157	16	211	26	200
7	162	17	221	27	210
8	172	18	245	28	
9	179	19	247	29	
10	181	20	258	30	208
				31	209

## OUTSTANDING OCCURRENCES

Mar. 1959	Type	Start UT	Duration Hrs.Mins	Maximum Time UT Peak Flux	Observing Period UT	Remarks
2	Simple 2	2058.0	10.6	2059.2	47	1220-2140
3						1215-2030
4						1215-2215
5	Complex	1559.7	1.0	1600.1	8	1235-2220
6						1215-2140
7	Complex	1246.4	11.7	1248.7	17	1155-2135
	Complex	1730	25.0	1745	> 58	
	Simple 1	1811.3	12.1	1818.3	5	
8						1520-2230
9	Simple 2	1401.1	0.1	1401.15	17	1220-2140
	Complex	1719.0	7.0	1721.1	62	
	Simple 1	1739.0	15.5	1744.0	6	
10	Complex	1302.2	26.0	1305.2	11	1230-2150
	Complex	1418.3	6.7	1422.2	7	
	Simple 2	1515.3	4.0	1516.2	24	
	Simple 2	1637.6	4.6	1638.5	32	
	Simple 2	1921.3	3.6	1922.0	12	
11	Complex	1411.8	2.6	1413.2	7	1340-2145
	Complex	1802.6	33.0	1820.4	156	
12	Complex	1653.6	4.4	1655.3	53	1215-2140 Strong Winds
	Post Inc.	1658.0	16.0		8	
13						1215-2150 Strong Winds
14						1725-2045 Strong Winds
15						1150-1540 Strong Winds
16	Simple 2	1158.2	0.6	1158.5	17	1145-2145 Strong Winds
	Simple 2	1625.3	5.0	1626.9	18	
17	Simple 2	1446.6	0.8	1447.0	10	1215-2100 Strong Winds
	Simple 2F	1709.3	1.6	1709.8	52	
18	Simple 1	1506.9	1.0	1507.2	7	1330-2235 Radar Interference
	Complex	1536.9	19.0	1539.8	11	
	Indeter		Indeter	1802	8	
	Simple 1	1838.9	1.3	1839.6	4	
19	Complex	1428.3	9.0	1428.9	19	1230-2130
	Simple 1	1631.0	1.7	1632.0	5	
	Simple 1	1951.3	4.0	1952.2	5	
20	Simple 1	1256.8	2.3	1257.8	6	1235-2150
	Complex	1525	> 35.0	1538.0	31	
	Post Inc. A	1600.0	1 30		20	
	Simple 3	1636.5	10.0	1642.3	8	
23	Post Inc.	1215	> 50.0		> 14	1215-2145
	Simple 3A	1311.0	4 30	1335.0	37	
	Simple 2	1329.8	4.7	1332.0	96	
	Simple 2	1335.4	2.0	1336.5	10	
	Simple 2	1339.2	2.5	1340.0	9	
	Simple 2	1521.3	6.0	1523.5	11	
	Complex	1531.3	7.7	1533.4	21	
	Simple 3A	1541.7	1 15	1618.2	16	
	Complex	1544.8	11.0	1552.4	30	
	Simple 2	1605.0	4.3	1607.0	11	
	Complex	1815.5	1.2	1815.7	28	
	Simple 3	1820.6	9.0	1822.8	5	
	Simple 2	1855.4	0.8	1855.7	8	
	Complex	1857.5	9.5	1902.5	32	
	Post Inc.	1907.0	55.0		10	
24	Simple 2	1459.9	0.2	1500.0	11	1215-2200
	Simple 2	1720.6	4.7	1723.6	34	
	Simple 3	1945.0	1 15	2007.8	17	
	Simple 3	2102.0	9.2	2107.2	12	
25	Group (3)	1644.9	40.0			1400-2145
	Complex	1644.9	9.7	1649.1	26	
	Simple 2F	1707.2	4.1	1709.6	24	
	Complex	1722.0	3.0	1723.6	34	
	Complex	2011.6	46.0	2016.9	506	
26	Simple 1	1247.8	4.3	1249.4	7	1215-2110 Strong Interference
	Simple 2	1517.1	5.3	1518.6	51	
	Complex	2100.4	Indeter	2103.4	21	
27						1130-2010 Rain All Day
30	Complex	1547.9	35.0	1550.3	20	1215-2150 Interference
31						1215-2050 Radar Interference

# SOLAR RADIO EMISSION DAILY DATA

FEBRUARY 1958

Washington, D.C.

3200 Mc.

Day	Flux	Day	Flux	Day	Flux
1	182	11	211	21	148
2		12	196	22	155
3	216	13	215	23	
4	219	14	188	24	184
5		15	185	25	175
6	228	16		26	179
7	231	17		27	163
8	219	18		28	173
9		19	164		
10	209	20			

## OUTSTANDING OCCURRENCES

Feb. 1958	Type		Start UT	Duration Hrs.Mins	Maximum		Observing Period UT	Remarks
	IAU				Time UT	Peak Flux		
1							1610-2050	
3	Complex Simple 1f	CD SD	1541.0 1726.0	3.0 5.0	1541.7 1727.4	27 11	1400-2130	
4							1400-2135	
6	Group (2) Complex Complex	GD	1802.8 1802.8 1804.9	4.6 1.5 2.6	1804.1 1805.3	38 29	1400-2145	
7							1345-2145	
8	Simple 3	SD	1738.0	2 15	Indeter	30	1330-2140	
10	Complex Post Inc.	CD	1900.3 1923	23.0 > 2	1905.3	126 13	1345-2140	
11	Simple 2	SD	1344.0	6.0	1346.0	21	1340-2130	
12	Simple 3 Complex	SD CD	Indeter 2036.0	Indeter 2.8	1847.2 2037.4	15 18	1330-2130	
13							1330-2130	
14	Simple 2	SD	1709.4	2.4	1710.5	9	1400-2140	
15	Simple 3	SD	1800.0	> 30.0	1817.2	15	1420-1830	
19							1415-2110	
21							1330-2140	
22							1320-1920	
24	Simple 1	SD	2000.6	1.0	2001.1	6	1330-2130	
25	Simple 3	SD	1954.0	> 1 40	2004.0	26	1330-2135	
26	Simple 2	SD	1502.6	2.5	1504.0	8	1400-2100	
27	Simple 1	SD	1940.0	1.0	1940.5	7	1830-2130	
28	Simple 2f Complex Simple 2	SD CD SD	1728.0 1838.0 2128.5	7.0 12.0 Indeter	1730.5 1843.5 2131.3	22 9 13	1330-2140	

CONTINUE - STANDARD - OBSERVE

# SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

MARCH 1959

Ottawa

2800 Mc.

	Type*	Start UT	Duration Hrs:mins	Maximum		Remarks
				Time UT	Peak Flux	
2	2 Simple 2	2058	7	2059	40	
6	3 Simple 3	1230	1 30	1239	20	
7	2 Simple 2	1248	1	1248.5	17	
7	9 Precursor f	1722	19		15	
	2 Simple 2	1741	15	1746	45	
9	6 Complex f	1719	6	1721.3	60	
	4 Post Increase f		10		5	
10	2 Simple 2	1515.5	2	1516	20	
10	2 Simple 2	1637.5	3.5	1638.8	28	
10	1 Simple 1	1921.5	3	1922.5	7	
10	1 Simple 1	2127	2	2128	5	
11	6 Complex f	1807	26	1814	125	
12	2 Simple 2 f	1653.5	5	1655	40	
12	1 Simple 1	1741.5	6	1742.5	4	
12	1 Simple 1	1757.5	5	1800	4	
14	1 Simple 1	2155.8	3	2156.5	5	
15	2 Simple 2	1907	1.5	1907.5	9	
16	3 Simple 3	1353	15	1356	8	
17	2 Simple 2	1709.8	2.5	1710	50	
18	2 Simple 2	1305.5	2.5	1306.5	9	
18	3 Simple 3	1345	12	1350	7	
18	1 Simple 1	1537	7	1539	6	
19	2 Simple 2 f	1428.3	3	1429	10	
20	1 Simple 1	1257	2	1257.8	7	
20	2 Simple 2	1413.3	1	1413.8	10	
20	3 Simple 3 A	1528	1 05	1542	25	
	1 Simple 1	1529	1	1529.5	7	
20	2 Simple 2	2237.7	5	2238.7	30	In sunset osc.
21	2 Simple 2	1313.5	1	1314	12	
21	2 Simple 2 f	1701	4	1701.5	50	
22	2 Simple 2 f	1340	15	1345.5	525	
	4 Post Increase A		3		30	
	6 Complex	1558.3	3.5	1559	30	
22	2 Simple 2	2217.5	2.5	2218.5	10	
23	3 Simple 3 A	1325	4	1336.5	25	
	2 Simple 2	1330	5	1332	70	
	1 Simple 1	1519.5	2	1520.5	7	
	2 Simple 2	1532.3	2.5	1533.3	16	
	9 Precursor	1550	2	1533.3	7	
	2 Simple 2	1552	1.5	1552.3	27	
23	2 Simple 2	1815.5	1	1815.8	15	
24	- Record incomplete	b1200	>3 20		55*	In sunrise
24	2 Simple 2	1723	1.5	1723.7	23	
24	1 Simple 1	2105.5	3	2107	5	
25	1 Simple 1	1308.5	2	1309.8	5	
25	2 Simple 2	1708.5	2.5	1709.3	28	
25	2 Simple 2	1723	1	1723.3	17	
25	6 Complex	2013.3	25	2016.8	475	
4	4 Post Increase		2		15	
26	2 Simple 2	1517.5	2	1518.5	35	
26	2 Simple 2	2102	3	2103.5	10	
28	3 Simple 3 f	1715	1 05	1733	20	
28	2 Simple 2 f	2120.5	7	2123.5	100	
	4 Post Increase		35		22	
29	8 Group (2)	1858	11.4			
	2 Simple 2	1858	2	1858.5	18	
	4 Post Increase		7		5	
	2 Simple 2	1908.4	1	1908.8	22	
29	2 Simple 2	2148	6	2150	20	
	4 Post Increase		35		7	
30	3 Simple 3 A	1549	22	1557	11	
	6 Complex	1550	3.5	1550.5	17	
31	2 Simple 2	2131	3.5	2132.2	225	

\*Maximum reached during this period

CONSERVE - STANDARD - BRIDGE

HOURS OF OBSERVATIONS: JANUARY, FEBRUARY, MARCH 1959

OBSERVING PERIOD: January 1330 UT - 2120 UT (approx.) (2) No observations:  
 February 1255 UT - 2200 UT (approx.) January 6,7  
 March 1215 UT - 2235 UT (approx.) March 8

with the following exceptions:

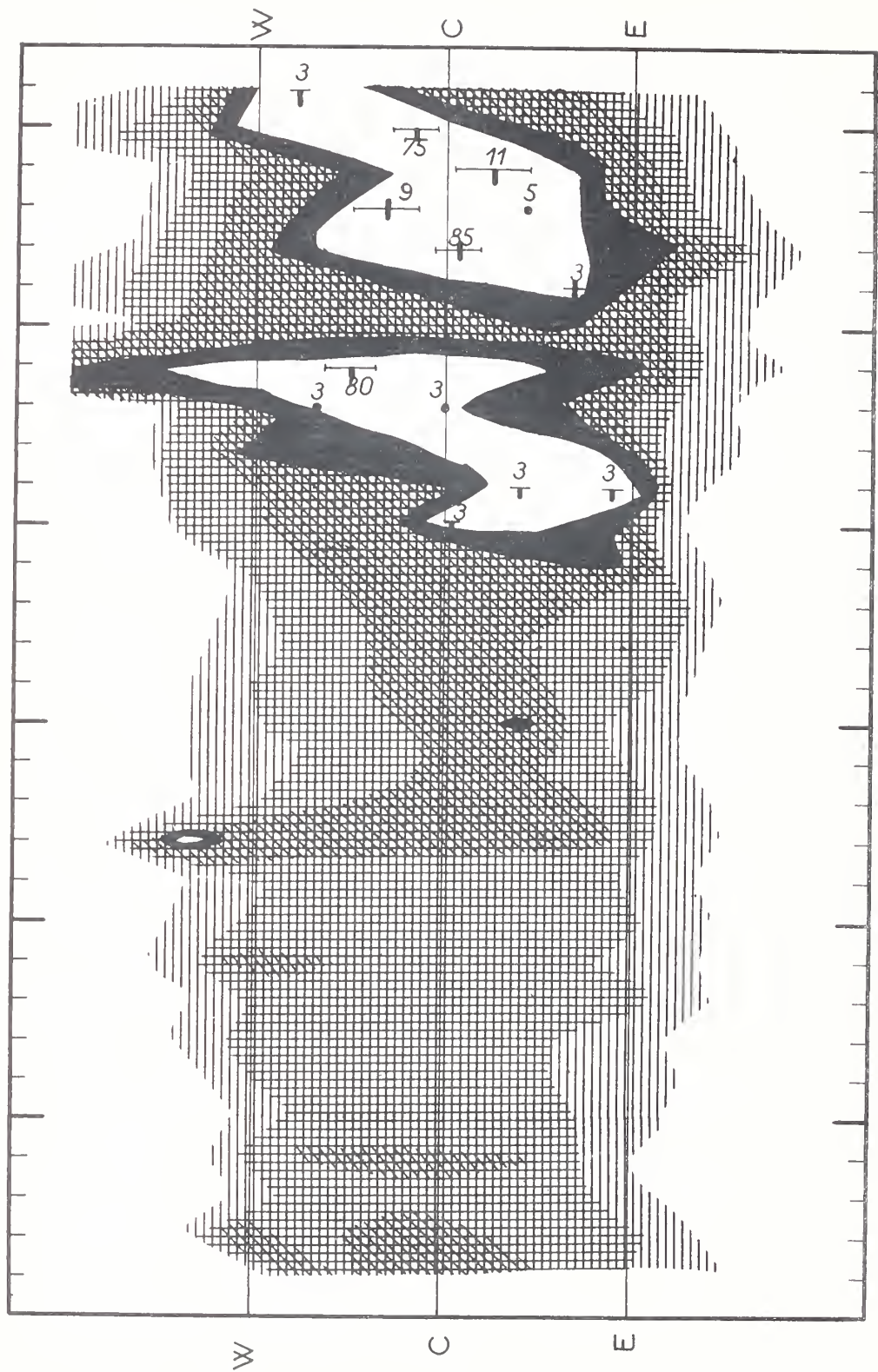
- (1) Continuous observations on all days have been broken for receiver calibration and by sporadic interference.
- (3) Delay in time of start of observations:  
 January 8 1550  
 16 - 1730  
 February 16 - 1420  
 3 - 1310  
 4 - 1320  
 9 - 1400  
 10 - 1400  
 15 - 1610



# SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATIONS

Nançay

169 Mc



MARCH 1959

MARCH



## SOLAR RADIO EMISSION

DAILY DATA  
DECEMBER 1958

BOULDER

167 MC

Dec. 1958	Flux Density $10^{-22} \text{ W m}^{-2} (\text{c/s})^{-1}$						Variability 0 to 3						Observing Periods	
	Hours UT					Day	Hours UT					Day	Hours UT	
	0 3	12 15	15 18	18 21	21 24		0 3	12 15	15 18	18 21	21 24			
1	-	-	49	30	50	42	-	-	2S	2S	2S	2S	14.1-23.3	
2	-	-	120	47	42	73	-	-	2S	2S	2S	2S	14.1-23.3	
3	-	-	54	74	41	58	-	-	1S	2S	2S	2S	14.0-23.3	
4	-	-	-	-	-	-	-	-	-	-	-	-	14.1-20.6; 20.9-23.3	
5	-	-	136	74	49	91	-	-	2S	2S	2S	2S	14.2-23.3	
6	-	-	-	23	112	67	-	-	1S	2S	2S	2S	14.2-23.2	Note 1
7	-	-	19	17	14	17	-	-	2S	2S	2S	2S	14.2-23.2	
8	-	-	208	39	206	144	-	-	2S	2S	2S	2S	14.2-21.8; 22.1-23.3	
9	-	-	13	12	9	12	-	-	2S	2S	2S	2S	14.3-23.3	
10	-	-	18	11	11	14	-	-	2S	2S	2S	2S	14.3-23.3	
11	-	-	23	22	20	22	-	-	2S	2S	2S	2S	14.5-19.8; 20.6-23.3	
12	-	-	34	19	15	24	-	-	2S	2S	1S	1S	14.3-23.3	
13	-	-	8	22	24	17	-	-	1S	1S	2S	1S	14.3-23.3	
14	-	-	30	34	30	31	-	-	2S	2S	1S	2S	14.3-23.3	
15	-	-	13	13	14	13	-	-	1S	2S	0S	1S	14.3-23.3	
16	-	-	11	11	-	11	-	-	1S	0S	1S	1S	14.3-23.3	
17	-	-	10	-	-	10	-	-	0S	0S	-	0S	14.3-20.5; 22.0-23.3	
18	-	-	12	12	13	12	-	-	0S	0S	0S	0S	14.3-23.3	
19	-	-	14	14	13	14	-	-	0S	1S	0S	0S	14.3-23.3	
20	-	-	-	-	17	17	-	-	-	-	0S	0S	20.0-23.3	
21	-	-	14	13	12	13	-	-	0S	1S	1S	1S	14.3-23.3	
22	-	-	13	12	12	12	-	-	0S	1S	2S	1S	14.3-17.1; 17.7-23.3	
23	-	-	12	12	10	12	-	-	0S	1S	0S	0S	14.3-23.3	
24	-	-	11	11	10	11	-	-	2S	1S	2S	1S	14.4-19.3; 20.6-23.4	
25	-	-	9	10	10	10	-	-	1S	1S	2S	1S	14.4-23.4	
26	-	-	-	9	9	9	-	-	1S	2S	0	1S	14.4-23.4	
27	-	-	10	10	9	9	-	-	1S	0	0	0S	14.4-23.4	
28	-	-	14	22	26	20	-	-	2S	2	2S	2S	14.4-23.4	
29	-	-	9	8	8	8	-	-	0S	0S	1S	0S	14.4-23.4	
30	-	-	8	10	10	9	-	-	0S	0S	1S	0S	14.4-23.4	
31	-	-	9	8	-	8	-	-	2S	1S	0S	1S	14.4-23.4	

Note: 1. Flux values for December 6 thru December 31 may be too low by some unknown factor, perhaps as large as 2.

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION  
OUTSTANDING OCCURRENCES

DECEMBER 1958

BOULDER

167 MC

	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22} \text{ w m}^{-2} (\text{c/s})^{-1}$		Remarks
						Inst.	Smooth	
Dec.								
1	6	1405 B	2317.2	555 D	CA	660 X	41 X	S
2	6	1405 B	1737.1	555 D	CA	810	110	S
3	6	1400 B	1417.9	329 D	CA	460	68	S, I 1926-1929
3	9	1929 I	1935.9	14 X	CD	790	140	
3	6	1943 X	2152.5	212 X	CA	1900 D	68	S
3	3	2216.9	2217.8	1	ECD	880	-	S
5	6	1410 B	1636.9	550 D	CA	600	130	S
6	6	1830 B	2054.3	290 D	CA	800 X	100 X	
7	6	1410 B	2032.4	550 D	CA	270	14	S
8	6	1410 B	2037.7	550 D	CA	860 D	200	S, I 2150-2205
9	8	1659	1703.3	7	ECD	1300 D	670 D	N3
9	3	2210.5	2211.0	1	ESD	320	-	S
10	6	1415 B	2221.0	545 D	CA	630 D	10	S
10	8	2101	2102.1	3	ECD	1000 D	-	S
10	8	2111	2112.0	3	ECD	530 D	-	
11	6	1430 B	1519.0	215 D	CA	1200 D	16	S, Large burst 1429.2
11	9	1805	Note 4	25 X	ECD	1800 D	250	N4
11	6	1830 X	2214.2	290 D	CA	790 D	12	S, I 1950-2037, N5
11	8	1854	1856.0	5	ECD	890 D	110	
11	8	1934.5	1937.5	6	ECD	1400 D	100	
12	6	1415 B	1722.0	545 D	CA	1400 D	26	S
13	1	1415 B	1847.1	545 D	MF	1400 D	-	S
13	3	2149.7	2150.1	1.3	ECD	1200 D	-	
14	6	1420 B	1530.7	540 D	CA	1074 D	24	S
15	3	1908.4	1908.9	0.9	ECD	90	-	
15	3	1912.8	1913.3	1.2	ECD	97	-	
16	3	2132.3	2133.2	1.6	ESD	140	-	Bursts 1717
19	3	1906.8	1907.5	1	ESD	60	-	
21	3	2103	2103.5	1	ESD	52	-	
21	3	2133.4	2134.3	1	ECD	39	-	
22	3	1803.3	1806.0	0.8	ESD	850 D	-	
22	3	1810.5	1811.0	1	ECD	160	-	
23	3	1833.1	1833.3	0.9	ESD	120	-	
23	3	1955.9	1956.1	0.7	ESD	42	-	
24	1	1425 B	1616.9	444 D	MF	530 D	-	S
24	3	2140.8	2141.0	0.6	ESD	160	-	
24	9	2149	2207	41 X	CA	89	15	
25	1	1425 B	2219.6	540 D	MF	520 D	-	S
25	3	1639.1	1639.4	0.7	ESD	240	-	
26	1	1425 B	1848.5	540 D	MF	450 D	-	S
27	3	1743.7	1744.0	1.0	ESD	88	-	Bursts 1439.0, 1727.9
28	6	1425 B	1509.5	540 D	CA	400 D	16	S, Large burst 1624.0
28	8	1854.4	1855.3	2.6	ECD	980 D	-	
28	8	2000	2000.5	1.5	ECD	980 D	-	
31	8	1702 X	1707.1	9 X	CD	350	-	S, N6

- Notes:
1. Interference may occasionally obscure or be mistaken for solar events.
  2. Flux values for December 6 thru 31 may be too low by some unknown factor, perhaps as large as 2.
  3. December 9, Burst 1905.0, large burst 1914.4.
  4. December 11, Maximum may have occurred sometime between 1809.5-1810.5 or at 1812.8.
  5. December 11, Large burst 2212.0.
  6. December 31, Burst started while making a test, another burst occurred at 1717.1.

# SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

JANUARY 1959

BOULDER

167 MC

Jan. 1959	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
1	6	1600 E		447 D	1
1	2	1657	1701	7	2
1	2	1816	1818	4	2
1	2	1845	1846	3	2
1	2	1948	1948	2	2
1	3	1919	1919	1.5	2
1	8	2131	2133	7	2
2	6	1425 E		548 D	1
2	2	1501	1501	2	2
2	2	1646	1648	4	2
2	2	1903.5	1904	2	2
3	6	1426 E	1431	544 D	1
3	2	1503	1503.5	2	2
3	2	2117	2118	2	2
4	6	1424 E		290 D	1
4	2	1506	1507	2	2
4	3	1628.5	1628.5	1	2
5	2	2047.5	2047.5	2.5	2
6	6	1500 E		513 D	2
6	2	2221	2222	1.5	2
7	6	1423 E		493 D	2
7	2	1935.5	1936	1.5	2
8	6	1424 E		493 D	1
8	2	2031	2032.5	6	2
8	2	2255	2256	3	2
9	6	1425 E		492 D	1
9	3	1933	1933	0.5	2
9	3	2012	2012	0.1	2
10	6	1425 E		492 D	2
11	6	1729	1755	91	2
11	6	1951		226 D	1
11	2	2158	2158	1	2
12	6	1601		54	1
12	6	1815 E		42 D	1
12	2	1938	1939.5	3	2
12	2	1942	1942.5	3	1
16	3	*1431.5	1432	1.5	2
18	3	1757.5	1758	1.5	2
18	2	2003	2003.9	1.5	2
18	3	2017	2017	1	1
18	3	2033	2033	.5	2
18	2	2122	2122	2	2
18	2	2132.5	2132.5	1.	1
20	7	1452	1509	40	1
21	2	1600	1600.5	1	2
22	3	1815	1815.5	1	3
22	2	1818	1821	3.5	3
22	3	1932.5	1932.5	1	2
22	2	2008	2008.5	1	2
22	8	2056	2058	14	3

\*Sunrise

Jan. 1959	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
23	6	1421 E		573 D	1
23	3	1549	1549	1	2
23	2	1635	1635.5	1	2
23	2	1639.5	1640.5	3.5	3
23	3	1810	1810	.2	2
23	2	1908	1908.5	1	2
23	2	1939.5	1940	2	2
23	3	1955	1955	.2	2
23	3	2003	2003	.2	2
23	3	2010	2010.5	1	2
23	3	2019	2019	1	2
23	3	2152.5	2152.5	.2	2
23	3	2155.5	2155.5	.2	2
23	3	2233.5	2233.5	.2	2
23	3	2338	2338	.2	2
23	3	2250	2250	.2	2
24	6	1419 E		576 D	1
24	2	1451.5	1454	3.5	2
24	3	1458	1458	.5	2
24	2	1509	1509	3	2
24	3	1535.5	1535.5	.2	2
24	2	1545	1546.5	3	2
24	3	1550	1551	1.5	2
24	3	1553	1553.3	1	2
24	3	1622.5	1622.5	.2	3
24	3	1645.5	1645.5	.2	2
24	2	2016	2017.5	2.5	2
24	3	2045	2045	.2	2
24	2	2159.5	2202	4.5	2
24	2	2303	2305	3	2
24	2	2320.8	2321	2.2	2
25	6	1416 E		578 D	2
25	2	1519	1520.5	3	2
26	6	1417 E		456 D	1
27	6	1418 E		552 D	1
27	3	1654	1654	.2	1
27	3	1816	1816	.2	2
27	8	1955	1957	5	3
28	6	1629		22	1
28	6	1906.5		292.5	1
28	3	1941	1941	.2	2
28	3	2001.5	2002	1	1
28	3	2026	2026	.2	2
29	2	1712	1712	1	2
29	6	2141		135. D	1
30	3	1559.5	1559.5	.5	2
31	3	1802	1802.2	1	1
31	3	1831	1831	.2	1
31	3	1837	1837	.5	1
31	3	2208	2208	.2	1
31	2	2312	2313	3	1

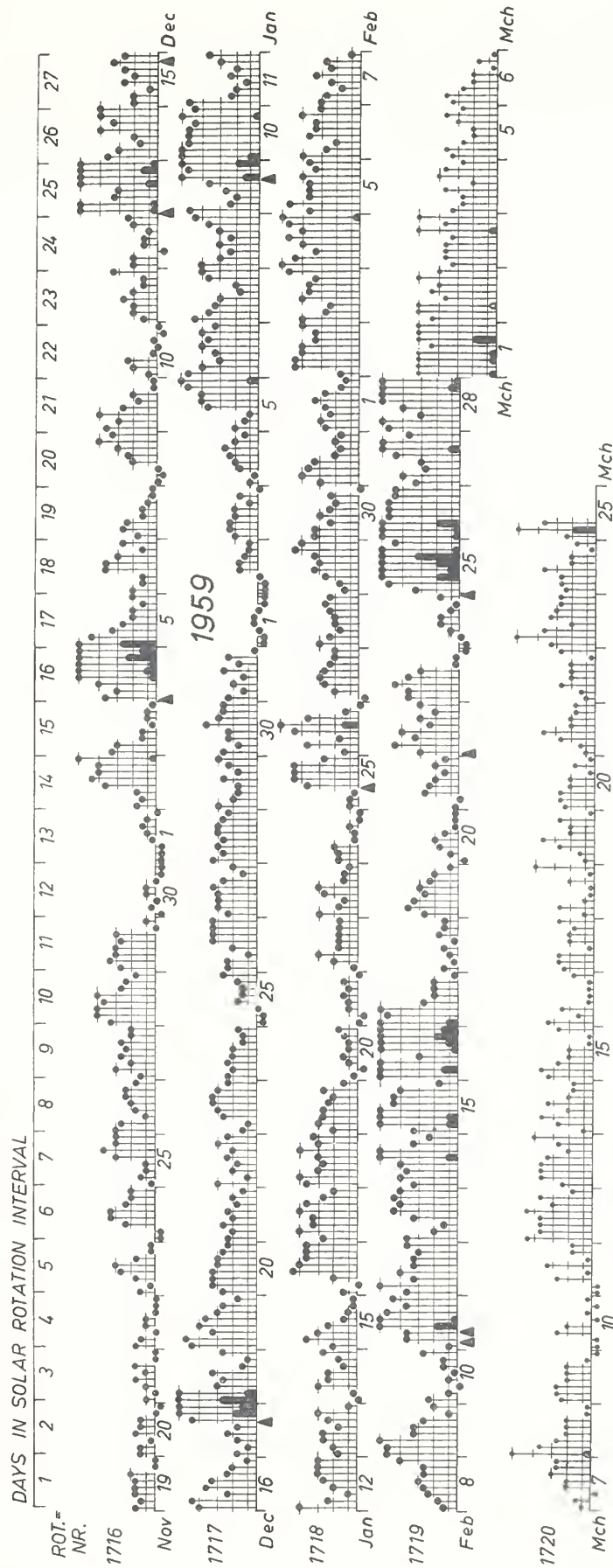
COMMERCE - STANDARDS - BOULDER

## GEOMAGNETIC ACTIVITY INDICES

FEBRUARY 1959

Feb. 1959	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	0.7	3-	3o	2+	3-	3+	3-	2-	1+	20-	11	Five Quiet	
2	1.1	2-	4+	4+	4o	4o	3+	3+	4o	29o	23		
3	1.2	4o	3-	2+	4o	4-	4-	3+	5-	28+	22		
4	1.3	5o	4+	3+	4o	5-	4o	5-	5+	35+	36		10
5	1.1	4-	5-	4-	4-	4-	4o	3+	4-	30+	24		18
												20	
6	1.0	4o	3-	2o	4-	3+	3+	4o	3o	26o	18	21	
7	0.6	3o	3-	2-	2+	3+	2+	3-	1o	19o	11	24	
8	0.9	1+	2-	2+	3-	3o	3-	3-	4o	20+	12		
9	1.1	5-	5-	5o	3+	3+	3-	1o	2o	27-	23		
10	0.2	2+	1o	0+	1o	1-	1+	1+	3-	11-	6		
11	1.4	1o	4-	4-	6+	5+	5-	4-	4+	33-	36	Five Disturbed	
12	1.1	4-	5o	3+	4o	3+	3+	3o	4-	29+	24		
13	1.2	4-	2o	1+	3+	4+	4o	4+	4o	27o	21		
14	1.3	3+	4o	4-	4o	6-	5o	3+	2+	31+	30		4
15	1.3	3+	6-	6-	5o	4+	4+	4o	2-	34o	37		16
												25	
16	1.7	5o	6o	5o	3o	5+	6-	6+	6o	42+	61	26	
17	1.0	6-	5-	5o	3-	2o	2o	2o	1-	25-	24	28	
18	0.1	1+	1-	1o	1+	1-	2-	1+	1+	9+	4		
19	0.7	3-	4-	3+	3-	3o	2+	2o	1o	21-	12		
20	0.1	0o	1o	2-	2o	1+	1-	1-	1-	8o	4		
21	0.2	1-	0+	3-	2+	2o	1+	2o	1+	13-	6	Ten Quiet	
22	0.8	3o	4+	3+	4o	2+	3o	2o	3o	25o	17		
23	0.3	4-	4-	4+	4-	3o	1-	1-	0o	20-	15		
24	0.2	0o	0+	1o	2-	2-	1o	1-	2-	8o	4		1
25	1.9	3+	5-	6+	6-	6+	7+	5+	4+	43+	69		7
												8	
26	1.5	5+	5+	6+	5-	5-	5-	4+	4+	40-	48	10	
27	1.3	3+	4o	3-	3o	4+	6-	5o	4-	32-	30	18	
28	1.5	5-	5o	3o	4o	5o	5o	6-	5+	38-	44	19	
												20	
												21	
												23	
												24	
Mean:	0.95									Mean:	24		

COMMERCE - STANDARDS - BOULDER



# PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1959 Febr. 28

(Ks from Wingst and Göttingen till 1959 March 25)

J.B.

COMMERCE • STANDARDS • BOULDER

VB

## CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

## NORTH ATLANTIC

FEBRUARY 1959

Feb. 1959	North Atlantic 6-hourly quality figures				Short-term forecasts issued about one hour in advance of:				Whole day index	Advance forecasts (J-reports) for whole day; issued in advance by:				Geomag- netic K <sub>Fr</sub>	
	00 to 06	06 to 12	12 to 18	18 to 24	00	06	12	18		1-7 days Final Js	1-7 days SDW	1-7 days J	1-7 days	Half Day (1) (2)	
1	6+	7-	7o	7+	7	7	7	7	7-	7		7		2	2
2	7+	6+	7o	7-	7	7	7	7	7-	7		7		(4)	3
3	7-	7+	7-	7-	7	7	7	7	7-	7		7		3	3
4	6o	7o	7-	6o	7	6	7	7	6+	7		7		(4)	(4)
5	6+	6+	7o	7-	6	6	7	6	7-	7		7		3	3
6	7-	7-	7+	7-	6	7	7	7	7-	7		7		2	3
7	7-	7-	7+	7o	7	7	7	7	7o	7		7		2	1
8	7-	7-	7+	7+	7	6	7	7	7o	7		7		2	3
9	5+	5+	7o	7o	7	5	7	6	6o	7		7		(4)	2
10	6+	6+	7+	7+	6	6	7	6	7-	5	5	7		1	1
11	7-	6-	7-	7-	5	5	4	4	7-	4	4	7		3	(4)
12	6-	6o	7o	7o	5	5	6	7	6+	4	4	4		(4)	3
13	7-	6o	6+	6-	7	7	7	6	6+	6		6		1	3
14	6o	7-	5+	6o	6	6	7	5	6o	6		6		3	(4)
15	6-	5o	7-	6+	6	6	5	6	6-	7		7		(4)	3
16	6-	6-	7-	4+	6	6	6	6	5+	7		7		(4)	(4)
17	5-	6-	6+	6+	5	5	5	6	6-	7		7		(4)	1
18	6o	6-	7-	7-	6	6	7	7	6+	7		7		0	1
19	7-	6+	7o	7o	6	6	7	7	7-	7		7		3	2
20	7o	7o	7+	7+	7	7	7	7	7+	7		7		1	1
21	7+	7-	7+	7o	7	7	7	7	7o	7		7		2	2
22	7-	6+	7+	7+	7	5	6	7	7o	7		7		3	3
23	7+	6o	7+	7+	7	7	7	7	7o	7		7		3	1
24	7o	7o	7+	7+	7	7	7	7	7o	7		7		0	2
25	7o	5o	6o	5-	7	7	6	4	6-	7		7		(4)	(4)
26	4-	3+	6+	6+	6	3	5	5	(4+)	3		3		(4)	(4)
27	6-	6-	7o	6o	5	5	7	6	6o	5		5		3	(4)
28	6-	6-	5+	5+	6	6	7	4	6-	6		6		(4)	(4)
Score: Quiet Periods															
					P	19	14	18	18					16	18
					S	6	12	6	8					7	7
					U	2	1	3	0					2	1
					F	0	0	1	1					2	1
Disturbed Periods															
					P	0	1	0	0					0	0
					S	0	0	0	0					1	1
					U	0	0	0	0					0	0
					F	1	0	0	1					0	0

( ) represent disturbed values.

COMMERCE - STANDARDS - BUILDER



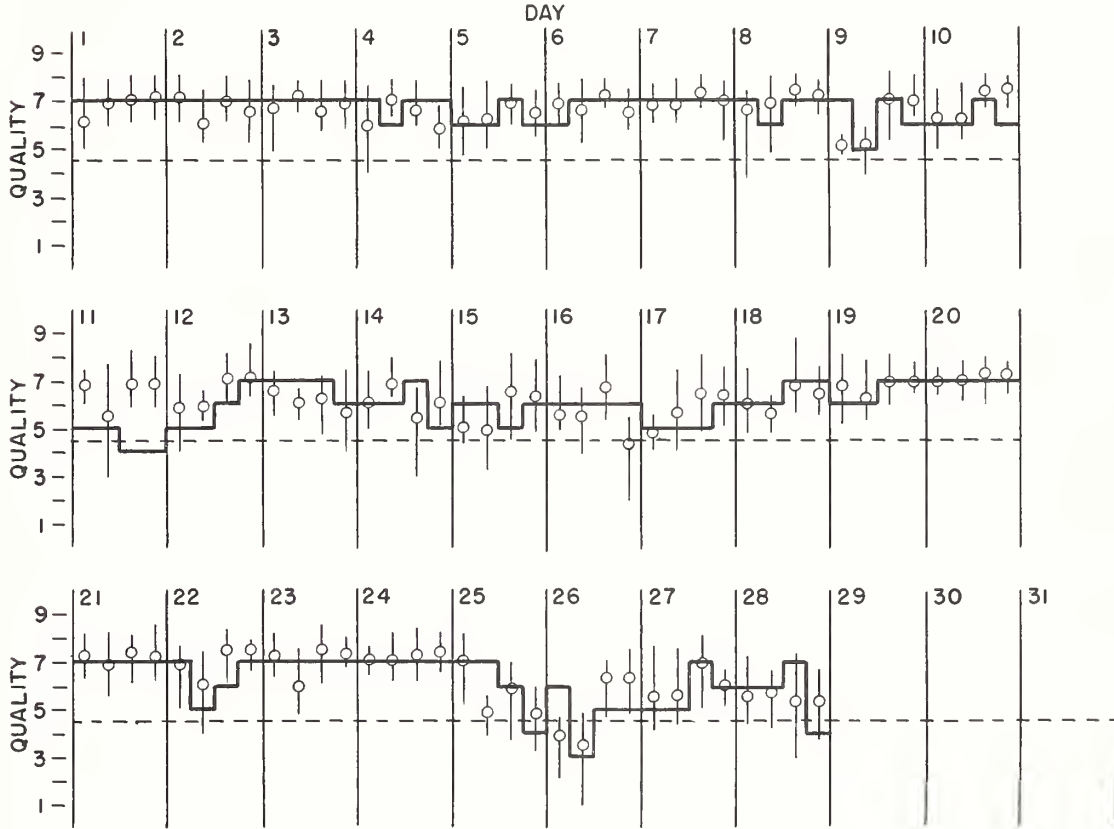
# CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS NORTH ATLANTIC

FEBRUARY 1959

— Short-term forecast

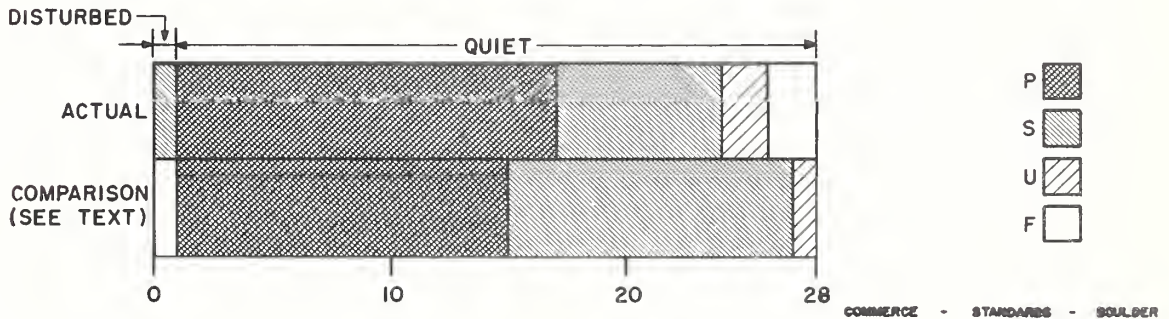
| Range of reports

o Quality figure



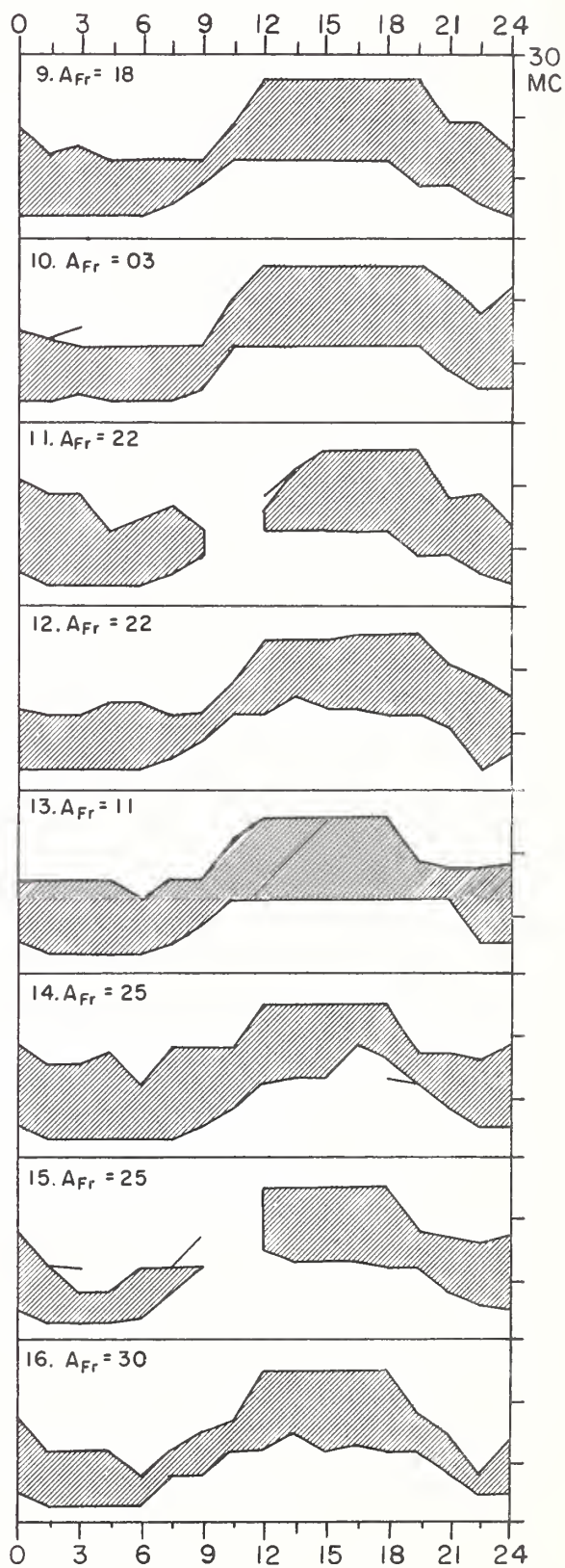
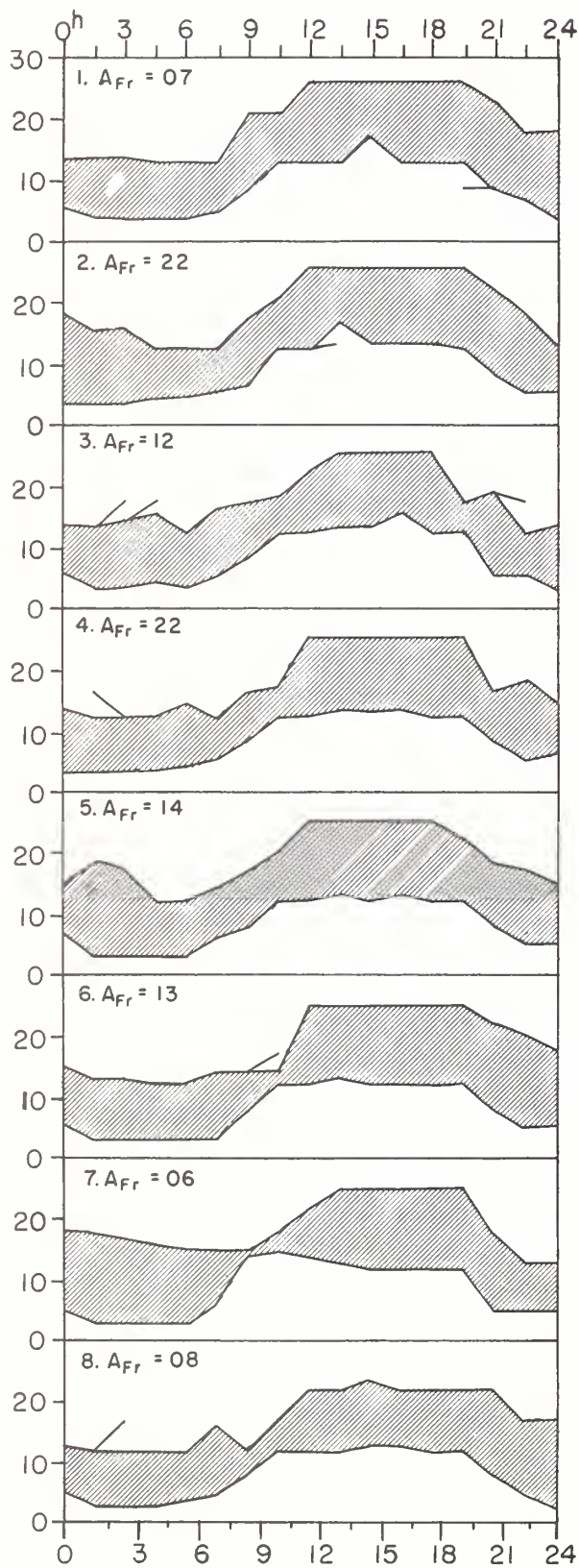
OUTCOME OF ADVANCED FORECASTS

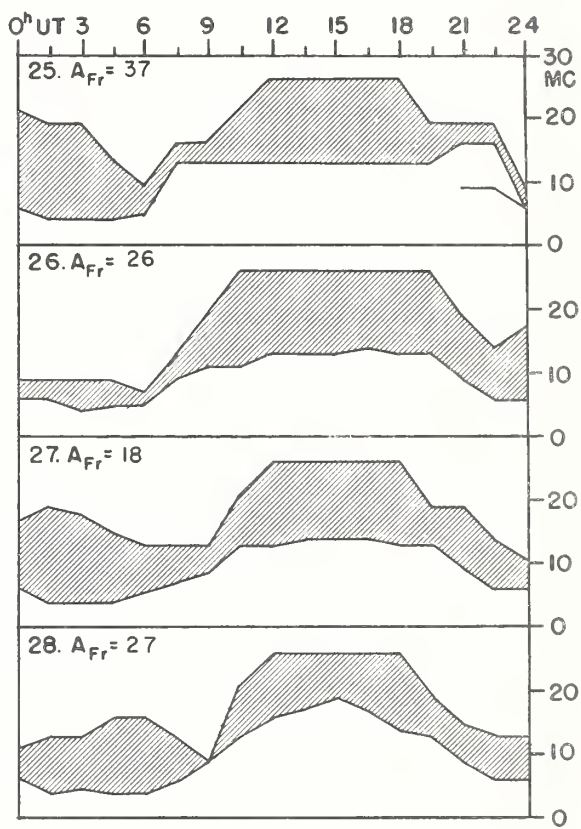
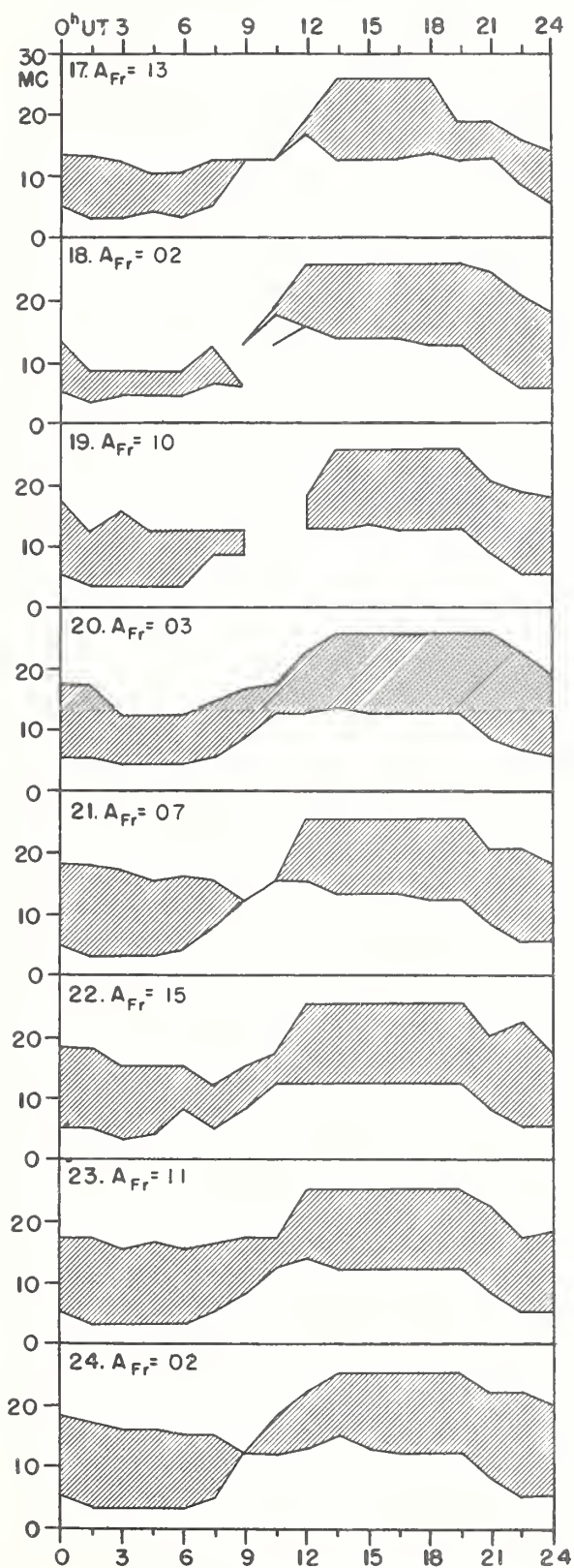
FINAL ESTIMATE



## USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

FEBRUARY 1959







## CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

## NORTH PACIFIC

FEBRUARY 1959

Feb. 1959	North Pacific 8-hourly quality figures			Short-term fore- casts issued at	Whole day index	Advance forecasts (Jp reports) for whole day; issued in advance by:				Geomag- netic K <sub>SI</sub>	
	03 to 11	11 to 19	19 to 03	02 10 18		1-7 days Final	1-7 days Jpa	1-7 days SDW	1-7 days Jp	Half (1)	Day (2)
1	6	6	7	6 6 6	7	6			6	(4)	(4)
2	5	6	7	6 5 6	6	6			6	3	(4)
3	5	6	7	5 6 6	6	6			6	(4)	(5)
4	6	6	6	6 6 5	6	6			6	(4)	(4)
5	6	6	6	6 6 5	6	5			5	3	(4)
6	6	6	7	6 5 6	7	5			5	2	2
7	7	7	6	6 6 7	7	5			5	2	3
8	6	6	6	6 6 5	6	6			6	(5)	2
9	6	7	7	6 4 6	7	6			6	1	1
10	6	6	7	6 6 6	6	6			6	(4)	(5)
11	6	5	6	6 4 5	5	6			6	3	3
12	6	6	7	5 4 6	6	4			4	2	(4)
13	7	6	7	6 6 6	6	5			5	(4)	(5)
14	7	4	7	6 3 5	6	6			6	(5)	(5)
15	5	4	6	6 3 5	5	6			6	(4)	(6)
16	6	4	5	5 5 5	5	6			6	(5)	2
17	5	5	6	5 5 6	5	6			6	1	1
18	5	4	6	5 5 6	5	6			6	3	3
19	6	6	6	5 5 6	6	5			5	1	0
20	6	5	6	5 6 6	6	5			5	2	1
21	6	6	6	6 6 6	6	6			6	3	2
22	6	6	7	6 6 6	7	6			6	(4)	2
23	6	7	6	6 6 7	6	6			6	0	1
24	7	6	6	6 6 6	7	6			6	(5)	(7)
25	5	3	4	6 3 3	(4)	6			6	(5)	(4)
26	3	3	5	5 5 4	(3)	5			5	3	(5)
27	6	4	6	6 6 4	5	5			5	(4)	(5)
28	6	3	5	6 5 4	5	6			6	(5)	(5)
Score:      Quiet Periods      P   17   12   7                      9 S   10   5   18                      15 U   0   0   1                      1 F   0   2   1                      1  Disturbed Periods      P   0   2   0                      0 S   0   4   1                      0 U   1   2   0                      1 F   0   1   0                      1											

( ) represent disturbed values.

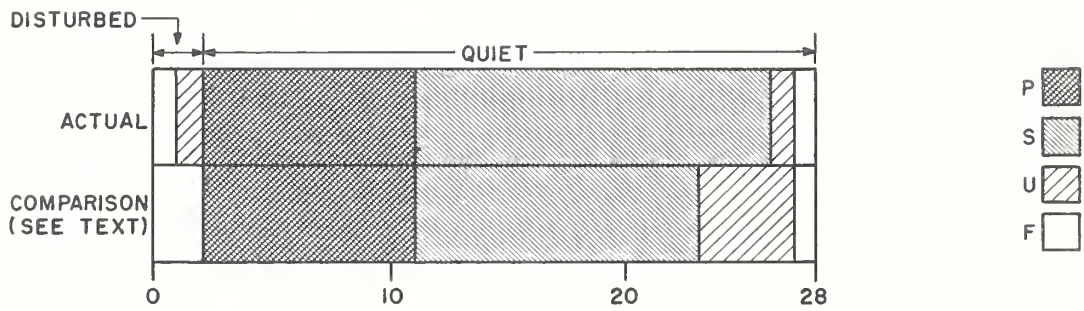
# CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

## NORTH PACIFIC

FEBRUARY 1959

OUTCOME OF ADVANCED FORECASTS

FINAL ESTIMATE



**ALERT PERIODS AND SPECIAL WORLD INTERVALS**  
INTERNATIONAL GEOPHYSICAL COOPERATION 1959

Issued Day/Time UT Mar. 1959	Advance Geophysical Alert	No.	Worldwide Geophysical Alert	Special World Interval
25/2305	Ft. Belvoir Magnetic Storm 25/1415Z	1	Aurora Inferred Magnetic Storm 26/0840Z	Start Special World Interval
26/1600		5		
27/1600		6		
28/1600		7		
29/0006	McMath Solar Flare 28/2118Z			Finish Special World Interval

COMMERCE - STANDARDS - BOULDER





